BONSAI: Indoors and Out

Jerald P. Stowell

American trees can be trained in the Japanese techniques with excellent results—as the author shows here—even in the windows of your home, so that many more today will be able to enjoy their beauty and charm.

$4.95

THE ancient Japanese art of bonsai-creating nature's works in miniatur so that they can be enjoyed in the home, or garden—now, for the first time explaine in terms of native American plant materials.

Jerald P. Stowell does not frustrate his readers with Japanese terms and names. The five basic Japanese styles and three variations of them are fully identified and fully described in English. Materials, such as soils and plants, are native to or widely cultivated in the United States. And the author discusses tender as well as hardy plants, for these—gardenias, camellias, geraniums, citrus, ivy, among others,—can be used decoratively indoors throughout the year, unlike the traditional hardy plants that withstand indoor conditions only for short periods.

BONSAI: Indoors and Out includes a thorough account of environmental conditions necessary for growing these miniatures. Step-by-step drawings show the development from rough tree to the refined, finished bonsai, further insuring the success of your attempts. An invaluable reference list will help you obtain trees and shrubs, tools and equipment, containers and stands.

The author explains the artistic meaning of bonsai as taught to him by an outstandin [illegible] bonsai master, and tells what [illegible] ed through ten years of study an [illegible] ience in the raising of bonsai. *BONSAI: Indoors and Out* is for everyone who admires the delicacy and charm of this ancient art and wants to create the beauty of bonsai for his own

Bonsai Indoors and Out

With drawings by the author
and photographs by Warren P. Cooper

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HOW TO GROW DECORATIVE
MINIATURE TREES
FROM HARDY
AND TENDER
PLANTS

BONSAI INDOORS AND OUT

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by Jerald P. Stowell

Princeton, New Jersey · Toronto · New York · London

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Preface

MANY BOOKS HAVE BEEN WRITTEN ON BONSAI with the theme that it is a Japanese art. Japanese horticultural varieties are described with Japanese names. We read about Japanese soils and tools. We are instructed in Japanese styles, with Japanese terminology, which sometimes have a mystical significance.

In this book no Japanese names are used. This is not because I do not respect the originators of the art of bonsai—indeed, I am indebted to the Japanese master to whom this book is dedicated—but because I believe the art can be more than exported to America. I believe it can be translated into an art of American bonsai.

Over the years many people have inspired me with a love of nature and an appreciation of the miniature world of bonsai. In a way they have all had a hand in the writing of this book. I am also fortunate to have had the understanding patience of Miss Ann Flynn and Mrs. Evelyn Dichek in the preparation of the manuscript. I am particularly indebted to Warren P. Cooper, Editor of the *Bonsai Bulletin* for the photographs, and also for considerable assistance in the development of the manuscript. He suggested the addition of much material that I missed along the way.

August, 1966
Armonk, New York

JERALD P. STOWELL

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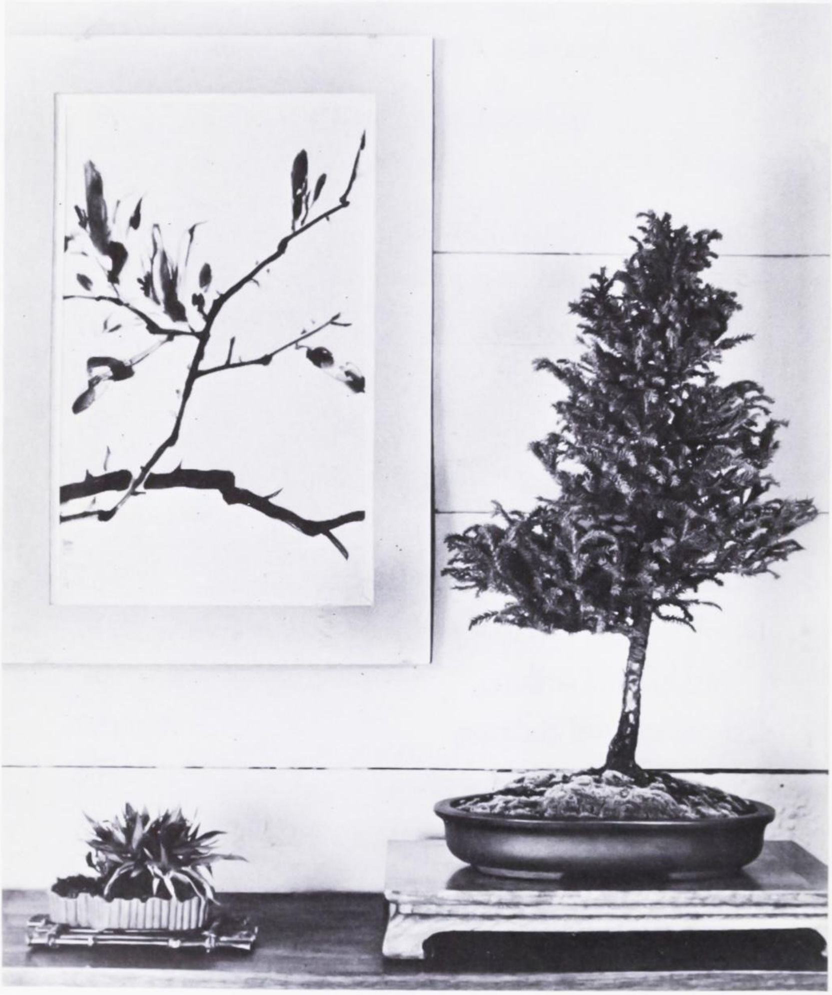
CRYPTOMERIA JAPONICA BANDISTUGA

A BONSAI DISPLAYED ON A LIBRARY SHELF WITH AN ORIGINAL WATER COLOR IN THE BACKGROUND. THE MINOR TREE AZALEA, (*Rhododendron obtusum*) IS 4 INCHES TALL.



1

Bonsai in the United States

FOR twenty years or more the Japanese word, *bonsai*, has been well known in this country, but its technical meaning is still generally unfamiliar. The essence of bonsai lies in techniques applied to horticultural material, not in the plants themselves, however we also apply the word bonsai to the trees or shrubs trained in stylized forms and grown in special containers. Pressed for a definition, we might say that bonsai is a three-dimensional living form of art. Through special techniques and the application of the principles of design, plants are developed into *objets d'art*. In maturity a bonsai is something of nature evoked in miniature. It is to be appreciated in the home or garden like a piece of sculpture, which indeed it is.

Bonsai have been grown and appreciated on the West Coast wherever the Japanese have settled and communicated their enthusiasm. In the East collections of handsome bonsai have been displayed at the Arnold Arboretum—this is the Larz Anderson Collection now nearly half-a-century old—and at the Brooklyn Botanic Garden. About ten years ago the Garden decided to include the teaching of bonsai techniques in its educational program. Japanese masters were brought to this country, and their classes in bonsai became immensely popular.

Today well-attended courses are given twice a year at both the Brooklyn Botanic Garden and the New York Botanical Garden in the Bronx. The popularity of bonsai has led to the organization of many clubs in the East and Midwest. The rapid growth of interest is typified by the Bonsai Society of Greater New York. This was established in February 1963 through the efforts of Yuji Yoshimura, who had been teaching and writing on the subject for many years, and a small group of enthusiasts. They held an open organizational meeting at the New York Botanical Garden and agreed to meet monthly to study bonsai. In less than three years the Society has grown from the original eighteen to more than five hundred, representing local and corresponding members throughout the United States, Canada, and many foreign countries.

The Society publishes the *Bonsai Bulletin*, the only English language periodical on the subject. Illustrated articles give practical as well as aesthetic information and there are listings of current exhibitions in the United States. Until the publication of the *Bulletin* the only other bonsai periodical was in Japanese. The Society participates in two annual flower shows. In the spring it manages the bonsai exhibit at the International Flower Show in New York, and in the fall it stages an exhibit for the New York Botanical Garden at the time of the Garden's autumn lecture on bonsai.

Although twenty-five years ago hardly a word of English instruction could be found on bonsai, the 1964 autumn issue of the *Bonsai Bulletin* offered an extensive bibliography made up mostly of publications which had appeared in the preceding five years. The most dramatic recent indication of interest has been the response to an article in a popular magazine. The article directed readers to the Bonsai Society of Greater New York for additional information. The response was overwhelming. In less than four months almost 3000 inquiries were received and the Society still answers some thirty letters a week. Inquiries come from all fifty states and from foreign countries as far away as Pakistan.

Popular interest in the art of bonsai has produced clubs throughout North America. Organizations have sprung up in Rochester, Cleveland, Philadelphia, Pittsburgh, Atlanta, Boston, Hartford, Toronto, Phoenix, North Carolina, Michigan, and at the United Nations. Garden clubs and flower shows have included bonsai in their horticultural classes. To more and more gardeners, flower arrangers, and amateur horticulturists, bonsai has become a fascinating aspect of ornamental horticulture.

Originally, the art of bonsai was strictly Japanese. The teachers came from Japan and so did most of the plants. But in time nurseries in this country began to propagate plants from seeds and cuttings to supply customers with the Asiatic species commonly used in Japan for bonsai. The early enthusiasts here felt that they did not possess a true bonsai unless their plant was an exotic like *Kuro-matsu*, *Pinus thunbergi*, the Japanese black pine; or *Goyo-matsu*, *Pinus parviflora*, the Japanese five-needled pine; or *Inu-buna*, *Fagus japonica*, the Japanese beech.

Nurserymen also imported tools and containers and a few mature bonsai plants from Japan for resale to an ever-expanding American public which knew bonsai only as a Japanese art.

TOWARD AMERICAN STYLES

Although the acknowledged bonsai today are Japanese, and the stylistic rules by which they are developed reflect the view of nature in the Orient, there is no reason we should not develop American styles of bonsai, as we have of flower arrangement. The styles, based on the traditional Japanese, can be changed gradually to reflect our own view of art and, most particularly, of nature. Today the more serious students of bonsai are collecting from the wild and discovering that our plants have possibilities for bonsai as handsome as do the Asiatic types.

The elm, *Ulmus americana,* makes an excellent bonsai. Trained to its natural form, it could introduce the American vase style. The zelkova tree of Japan, grown in the broom style, would be comparable but, by no means, a counterpart.

The American red maple, *Acer rubrum,* makes a most attractive bonsai with its brilliant fall color and gray-white bark. I have appreciated this maple in a container for ten years. So grown, the plant gradually produces smaller leaves and is sturdy enough to be leaf trimmed each year. In spring the branch tips turn red just before the leaf buds open. In maturity it is naturally upright with a layering of leaves that form an irregular oval, which is most pleasing. As a bonsai, this maple might introduce an American oval style.

There is a variant of *Acer rubrum* that grows in the New Jersey Pine Barrens. I have collected this one and like it for bonsai because the leaves are smaller. The tree looks very like the Japanese trident maple, *Acer buergerianum.*

Our native white pine, *Pinus strobus,* has a magnificent adult form that could be trained to an American informal upright style. The Japanese white pine, *Pinus pentaphylla,* is similar but again not a counterpart. Our pitch pine, *Pinus rigida,* could replace the similar Japanese black pine. The native winterberry, *Ilex verticillata* is similar to *Ilex serrata.*

If we study these and other native trees in their natural environment, our artistic view of bonsai will inevitably be altered and our bonsai will then be miniature reflections of American elms and maples, apples, and pines. The culture and training required to develop these native plants into bonsai are the same as those for the Japanese plants, and perhaps bonsai developed from native plants are more deeply gratifying to us.

2

Formal Principles of Bonsai

ALMOST any woody or semiwoody plant can be grown as bonsai. The commonly used species are, however, those with small leaves or needles so that trunk, branches, twigs, leaves, and roots will be in scale in the overall composition. There are exceptions, and some large-leaved plants are sometimes grown for attractive dormant states. In any case, bonsai should look like mature trees in miniature.

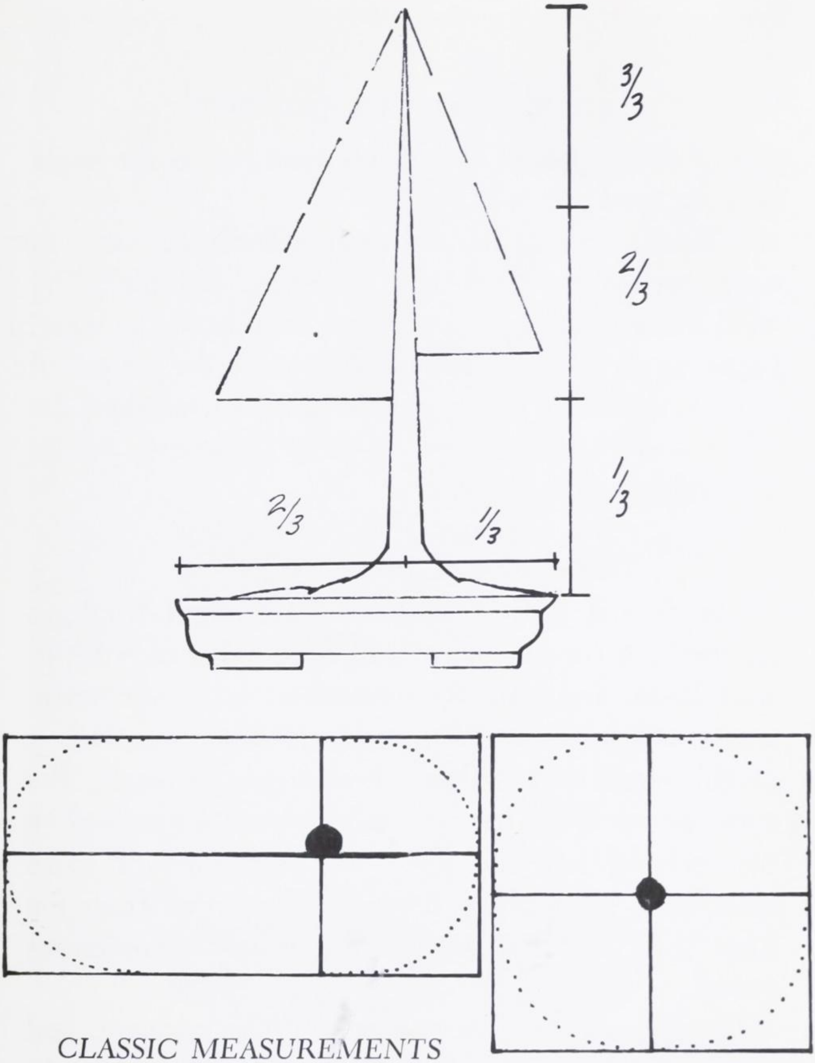
Bonsai are meant to communicate the idea of a windswept tree clinging to a rocky crag, perhaps an ancient rugged pine that has survived years of wind, sun, and rain; or of a group of such trees; or of some lovely distant landscape. Yet bonsai should never appear grotesque or unnaturally distorted; they should simply reproduce nature in miniature.

At the same time, a bonsai should hold its own, regardless of connotation. Basic components—container, surface roots, trunk, branches and twigs with leaves—should be related in an artistic whole as with the elements of any other art form.

In the development of a bonsai the characteristics of the tree are determined first; then the receptacle is selected. It functions like the frame on a painting, defining the limits of the composition and emphasizing its identity. A container must not compete, only enhance. Otherwise the illusion of the bonsai is lost.

IMPORTANCE OF THE TRUNK

The trunk is the most important aspect of a bonsai; other aspects of the tree are developed around it. The classical division of single-trunk trees into five bonsai styles—formal upright, informal upright, slanting, semi-cascading, and cascading—is based on the line of the trunk. Japanese artists have followed these styles consistently. They always permit the line of the trunk to dictate the nature of the composition. One reason for this is the stiffness of wood. Sometimes drastic pruning and wiring can change the shape of a trunk, but in old trees the shape of the wood is permanently set. The only



CLASSIC MEASUREMENTS

FIGS. 1-3 *The classic proportions of the formal upright style is the basis for all bonsai. The trunk design is roughly divided into three equal thirds.* (FIGURE 1) *The lowest third is open; only trunk and surface roots show. The center third emphasizes the structure of the branches, with some open spaces revealing portions of the trunk as it tapers toward the top. In the upper third, the main branches divide into fine branchlets and finally into a network of twigs.*

The tree is placed off center two-thirds (FIGURES 1 AND 2) *of the distance from the edge of the container to allow the longest branch to lie directly above the surface area. The shorter branch over the remaining one third.*

Trees planted in square or round containers are usually set in the center of the pot (FIGURE 3).

area of choice left to the grower then lies in the angle between trunk and container.

Differentiation of trunk patterns reflects the common ways that isolated trees grow in nature. If buffeted by wind, trees grow more slowly and away from the wind. Light, wind, moisture, and soil determine the pattern of a trunk, and trees growing under similar conditions develop in much the same way—except, of course, for inherent differences in species.

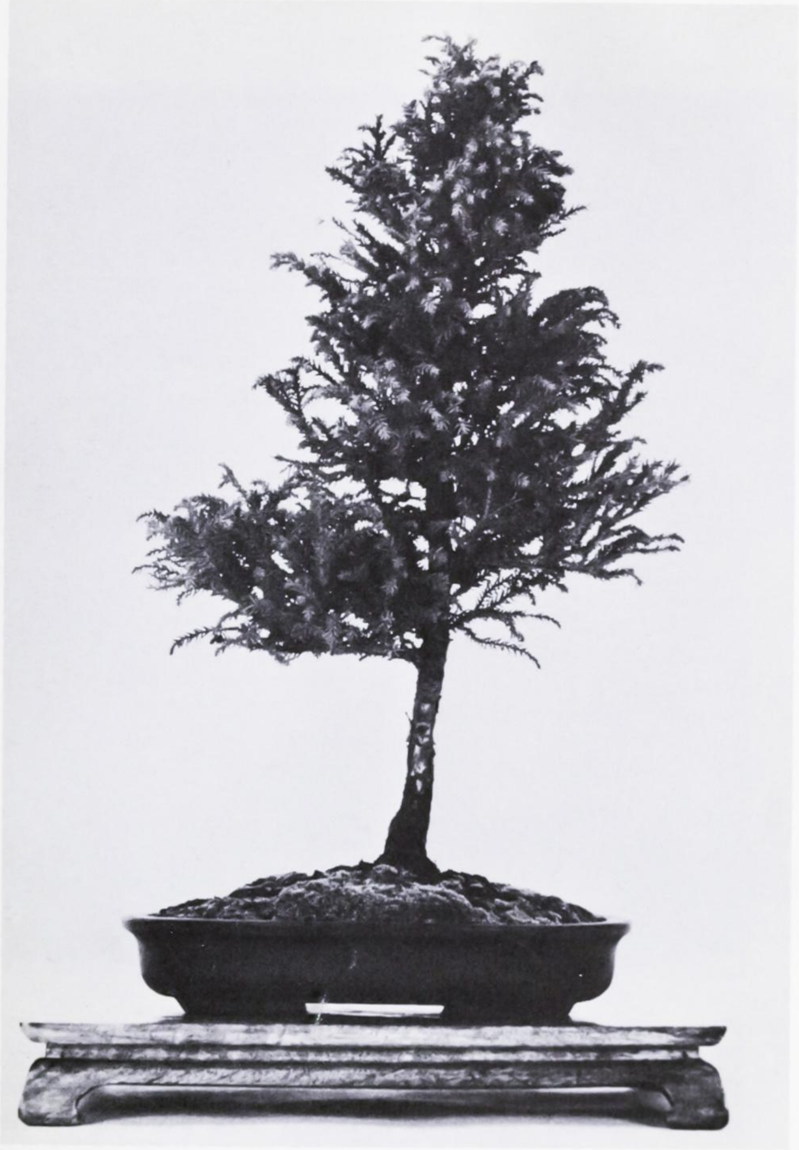
FORMAL UPRIGHT STYLE

The formal upright style with a straight trunk, is essentially a conical, sometimes rounded, tree with an erect leader and horizontal branches, as in our native spruce and hemlock. Frequently, not always, foliage is roughly contained within an equilateral triangle; the apex, the tip of the tree, the two lower angles formed by the ends of left and right branches. One of these branches is lower and extends a little farther from the trunk than the other. This form is usual for coniferous bonsai.

Deciduous trees tend to form isosceles triangles, and they are less used than evergreens for formal bonsai. In the formal style, the tree is placed about two-thirds along the length of the container, placed off center front to back. The side with the higher branch lies closer to the edge of the pot.

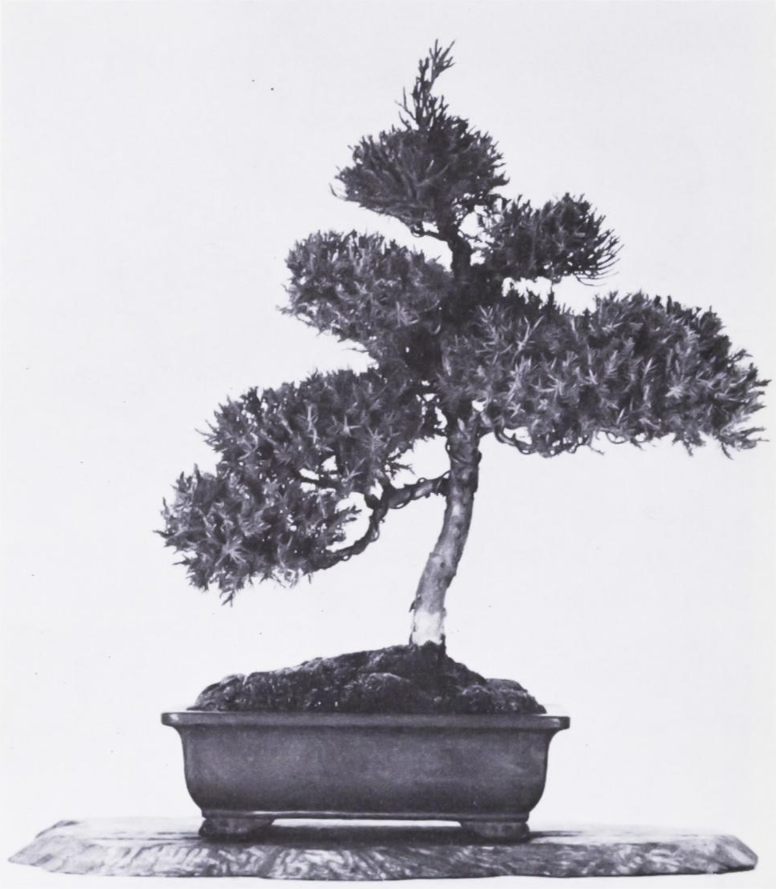
INFORMAL UPRIGHT

The informal upright bonsai is also a straight tree with a prominent leader, but the trunk is slightly curved



FORMAL UPRIGHT STYLE

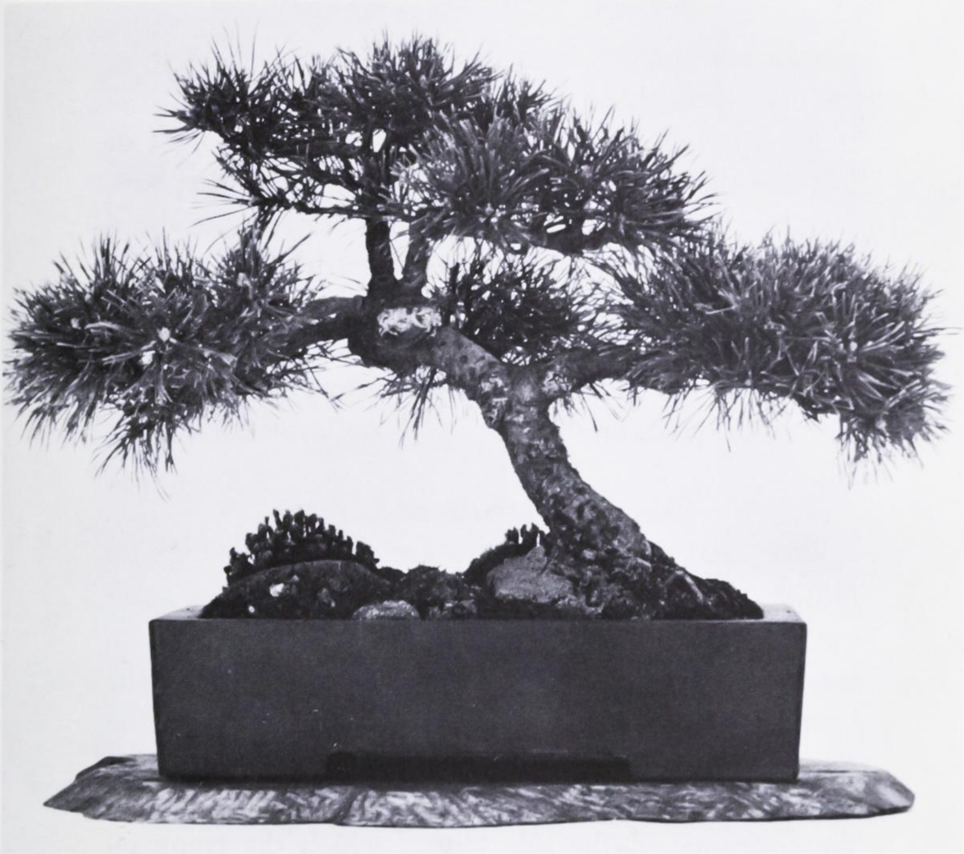
THIS *Cryptomeria japonica Bandistuga* IS 18 INCHES HIGH. IT WAS PRODUCED BY GRAFTING AND HAS BEEN POTTED THREE YEARS. THE CONTAINER IS A DARK BROWN UNGLAZED OVAL.



INFORMAL UPRIGHT STYLE

THE EASTERN REDCEDAR (*Juniperus virginiana*) WAS PRODUCED FROM A NATURAL TREE. IT IS 12 INCHES HIGH, HAS BEEN POTTED TEN YEARS, AND IS APPROXIMATELY FIFTEEN YEARS OLD. THE CONTAINER IS UNGLAZED AND IS DARK BROWN.

and the leader slants forward a little. The curve may be more pronounced near the top. Otherwise the style is much the same as that of the formal upright.



SLANTING STYLE

THIS MUGHO PINE (*Pinus pumila*) IS ABOUT FIFTEEN YEARS OLD ALTHOUGH IT HAS BEEN POTTED FOR TEN YEARS. IT WAS PRODUCED FROM A NATURAL TREE, IS 9 INCHES HIGH AND IS IN A DARK BROWN UNGLAZED CONTAINER.

SLANTING STYLE

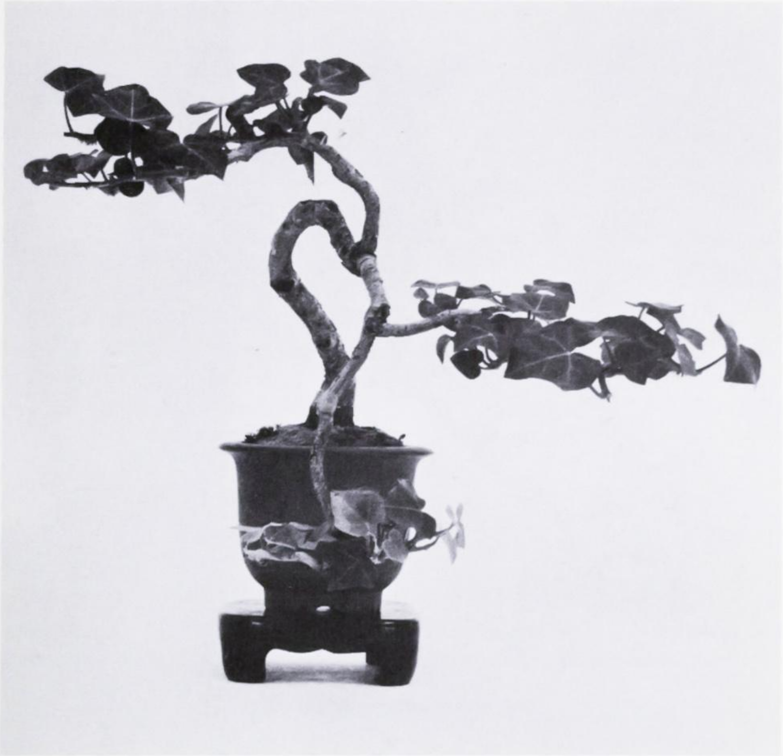
In the slanting style the trunk bends from the base to make a wider angle. The difference is not marked and perhaps unimportant, since it is mainly a matter of balance. In the informal upright style, the shape of the mass is essentially perpendicular. In this slanting style, the mass is weighted more to the right or to the left; the trunk is usually twisted or curved, bending to right or left and the lowest branch reaches out in the opposite direction from the trunk. The mass of the tree lies above the lowest branch. The tree is planted in the container well to one side, and the tip is bent slightly forward. These three styles suggest field-grown trees like the white oaks and hickories that grow along pasture fence rows or the sycamores that bend over valley streams.

CASCADING AND OTHER STYLES

Trees that suggest the other two styles grow high on hillsides, perhaps on a sharp slope, from which they reach out and down, seeking the sun and some shelter from wind and hard rain. In the semi-cascading style, the trunk grows up and out at a considerable angle, as in the slanting style, but the tip of the trunk or of the major branch dips to a point between the rim and the feet of the container on the side toward which the trunk inclines. For balance, a shorter branch is trained in the opposite direction.

In the cascading style, the trunk usually bends down sharply over the edge of the container, and extends well below the feet of the container. But in some cases, the trunk slants up, and it is a major branch system that forms the cascade.

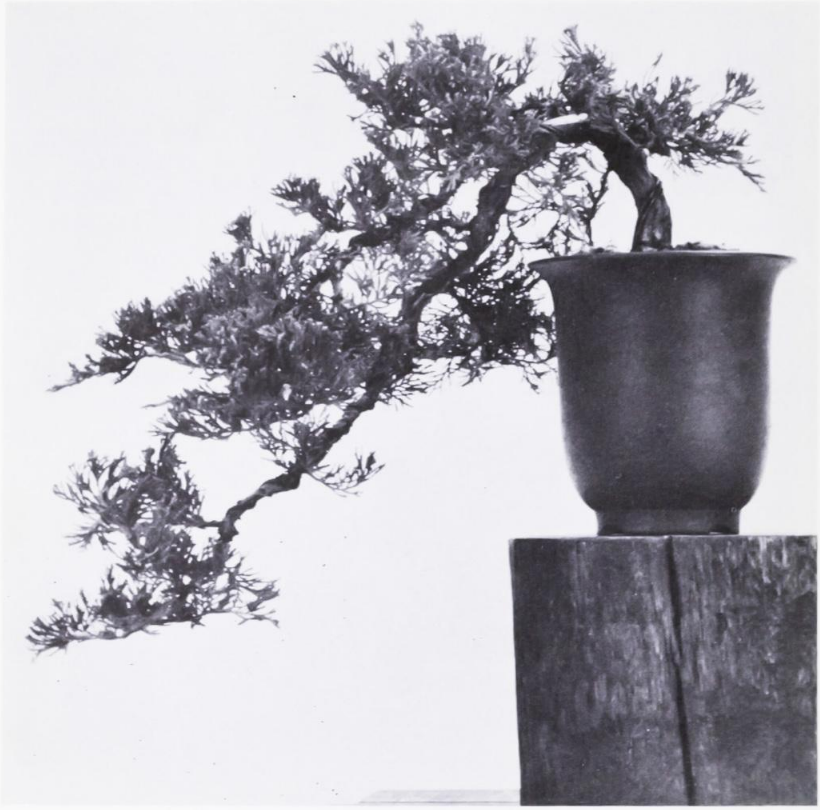
In addition to these five basic styles there are several others: some for groups of trees from single roots, some for plantings of multiple trees, some for rock plantings,



SEMI-CASCADE STYLE

COMMON IVY (*Hedera helix*) WAS USED FOR THIS SEMI-CASCADE. THE TWELVE YEAR OLD PLANT WAS PRODUCED FROM CUTTINGS WHICH WERE POTTED TEN YEARS AGO. IT IS 6 INCHES WIDE AND PLANTED IN A DARK BROWN UNGLAZED CONTAINER.

some for special versions of single-trunk specimens. In all, the Japanese describe more than thirty variations, but distinctions are not always clear, and they hardly concern us here. For those who are interested, there is full consideration of all of these in *The Japanese Art of Miniature Trees and Landscape* by Yoshimura and Halford.

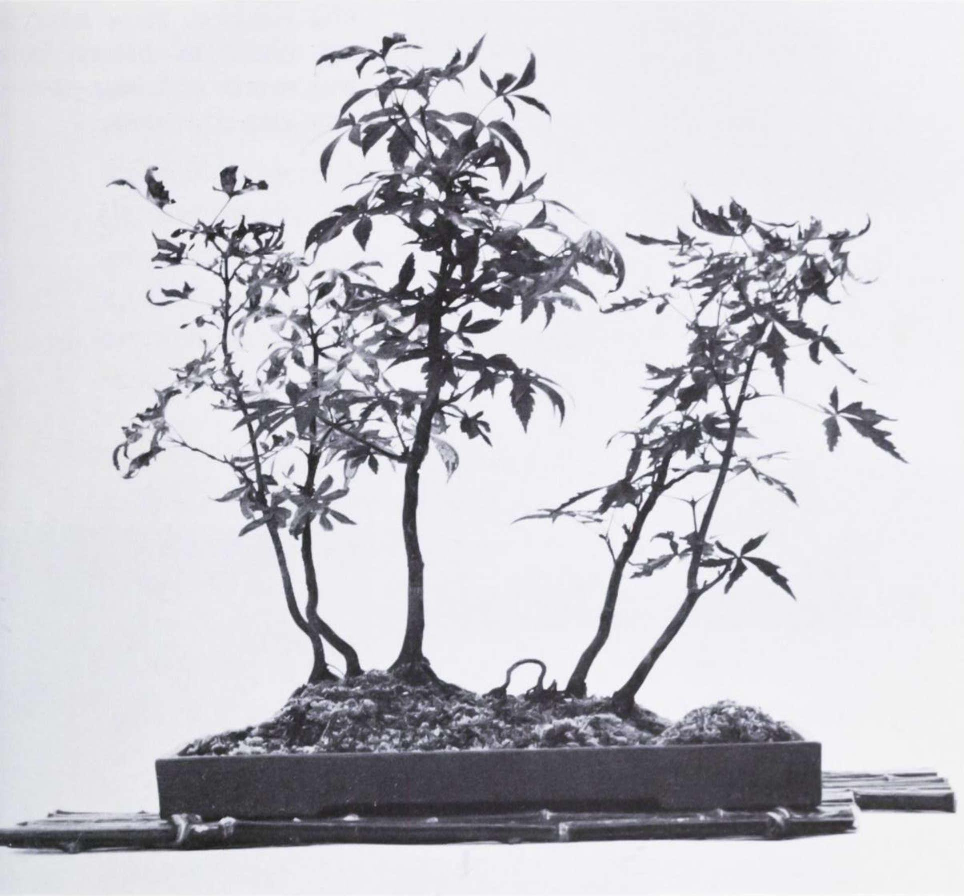


CASCADE STYLE

The juniper (*Juniper procumbens*), which is probably fifteen years old, was produced from a cutting and potted five years ago. It is 13 inches wide and planted in a dark brown unglazed container.

SURFACE ROOTS

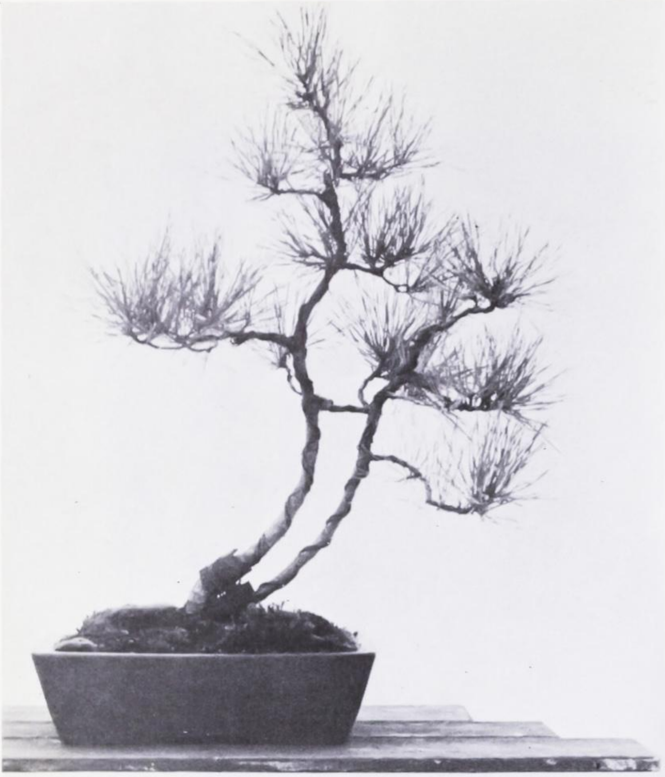
Although the trunk is the focal point and vital to a properly formed bonsai, a well-developed system of surface roots is also necessary. Biologically roots anchor trees and collect water and mineral salts for transportation through the trunk to the food factories in the leaves.



GROUP STYLE

THIS GROUP WAS PRODUCED FROM FIVE SEEDLINGS OF JAPANESE RED MAPLE (*Acer palmatum*). THE PLANTING IS 14 INCHES HIGH, 12 INCHES WIDE, AND IS IN A DARK BROWN UNGLAZED CONTAINER.

In bonsai, roots have the added *visual* function of giving a tree the appearance of secure placement. Otherwise, confined as it is in a small container, a tree may seem to be toppling over. Woody, tapering surface roots on

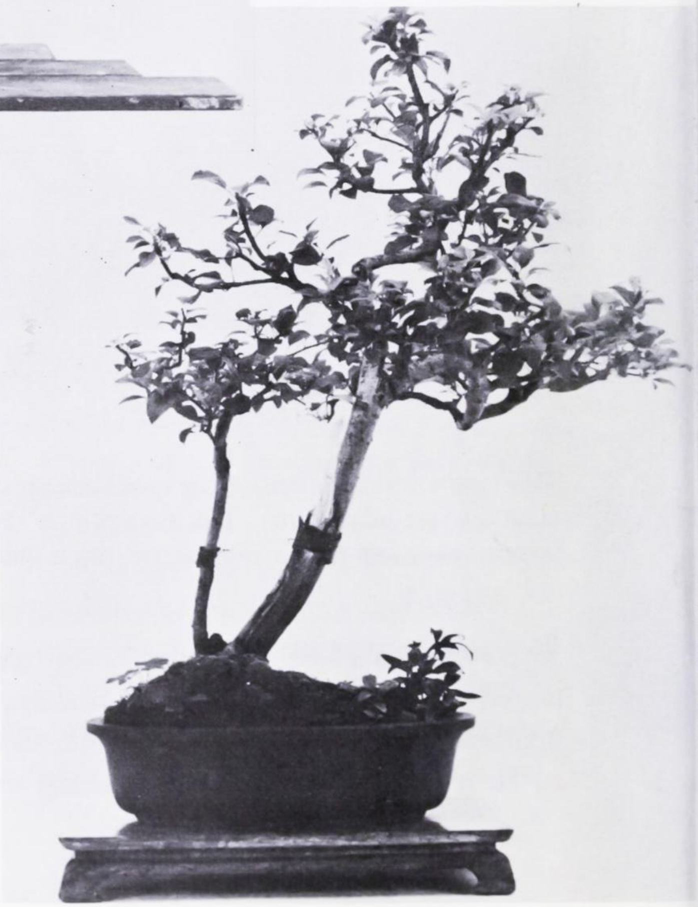


TWIN TRUNK STYLE

This pitch pine (*Pinus rigida*) was produced from a natural tree. The 24-inch tree was potted in a dark brown unglazed container.

TWIN TRUNK STYLE WITH DRIFTWOOD EFFECT

The 22-inch apple tree (*Malus pumila*) was produced from a natural tree. It has been in a reddish-brown unglazed oval container for five years.



all sides of the trunk give a bonsai the look of greater stability.

Surface roots also create an illusion of age. Moss growing among roots that radiate from the trunk with only the surface visible give the appearance of an old, field-grown tree. This effect is lost if roots are drawn so far up that they are *fully* exposed in an unnatural way. And exposed roots will not thicken and taper as do partially exposed roots.

BRANCHES, TWIGS AND LEAVES

The branches give a bonsai much of its artistic form—its width and depth. They flow from the trunk and harmonize with it in length and thickness. As it extends out from the trunk, each branch tapers progressively into small twigs.

The design of branches is patterned as closely as possible after that of trees in nature, but only of older specimens since there is usually considerable design difference between the forms of young and of mature trees. Branches near the base of old trees tend to grow more horizontally than younger branches; which incline to grow upward as well as outward. In an immature specimen, low, horizontal branches are often entirely lacking. Indeed, the branch pattern can strongly suggest the image of an aged tree.

Twigs and leaves are the outermost elements of the bonsai. Ideally, leaves are in proportion to twigs, branches, and trunk. Usually small-leaved plants like azaleas and junipers are chosen, although species with large leaves and interesting configurations of branches and twigs, such as maples, may be selected for their interesting shape during the dormant period.

In Japan certain deciduous plants are grown as bonsai for their bare winter beauty as well as their full summer foliage. The trident maple is an example. This tree develops a fine branch pattern and a twigginess that the Japanese find subtly enjoyable. In this country in winter the bark of the American red maple looks silvery gray and the twigs stand out in stark silhouette.

PLACEMENT OF BRANCHES

While bonsai should appear pleasing all round, they are composed with a definite front and back, a left and a right. The back of the tree is designed to suggest depth, and usually it is the area with the most foliage; this often confuses Westerners, since we like to see masses of leaves all round. The front of a bonsai is, however kept somewhat open so that the line of the trunk may be clearly seen. All branches radiate from the trunk, to left or right, or they may extend toward the back.

The height of a tree and position of branches are interdependent. Vertically the upright or slanting bonsai is roughly divided into thirds. The lowest third is open; only trunk and surface roots show. The center third emphasizes the structure of the branches, with some open spaces revealing portions of the trunk as it tapers toward the top. In the upper third, the main branches divide into fine branchlets, and finally into a network of twigs.

As a rule, branches radiating from the trunk are arranged in groups of three. Of the three lowest branches, one is trained to the left and one to the right; both trained slightly forward to define the lateral aspect of the tree. To avoid an exact balance, one branch is slightly higher than its counterpart on the other side. The third branch lies between or above the other two and is trained toward the back for depth.

Each succeeding group of branches is again arranged in sets of three—always with open areas through which the line of the trunk may be seen—until the topmost third of the bonsai is reached. This is usually composed of branches trained toward the front, as well as to the sides and back, so as to form a dense network of fine twigs.

CONTAINERS

Containers are made in various shapes, sizes, colors, and textures, but the selection depends on the individual tree. Although the form and color of the container are important, neither should detract from the expressiveness of a bonsai. The container should harmonize—complement color and mood—and also be in good proportion to the tree.

Traditionally, there are prescribed colors and shapes for specific types of bonsai. It is not absolutely necessary to follow traditions, but since these have been developed to insure harmony between tree and container, it is usually better not to innovate.

Unglazed or muted earth tones, brown and red, look best with evergreens. Blue, green, or gray containers contrast well with deciduous plants that have orange, yellow, or red flowers or red fruits, as well as plants with brilliant fall coloring. Blue is attractive with yellow-flowering trees. Black is excellent with white-berried or white-flowering plants, white to off-white with any others. White also looks well with bonsai of a light, airy quality.

A dignified, upright bonsai calls for a flat rectangular or oval pot of muted color. Slanting trees are usually planted in rectangular or oval pots, though they may be put into round or perhaps square containers. In round or square containers they are always set in the center. Trees with thick, heavy trunks and dense foliage look best in dark sturdy, bulky pots, which contribute to a settled appearance. Shallow, round, or oval pots are good for trees with a windswept or an informal look. Trees that are tall and slim-trunked and have delicate foliage look right in ornate glazed containers with decorations of flowers or birds. Cascading bonsai are placed in the center of deep pots which are round, octagonal, or square.

3

How Bonsai Are Developed

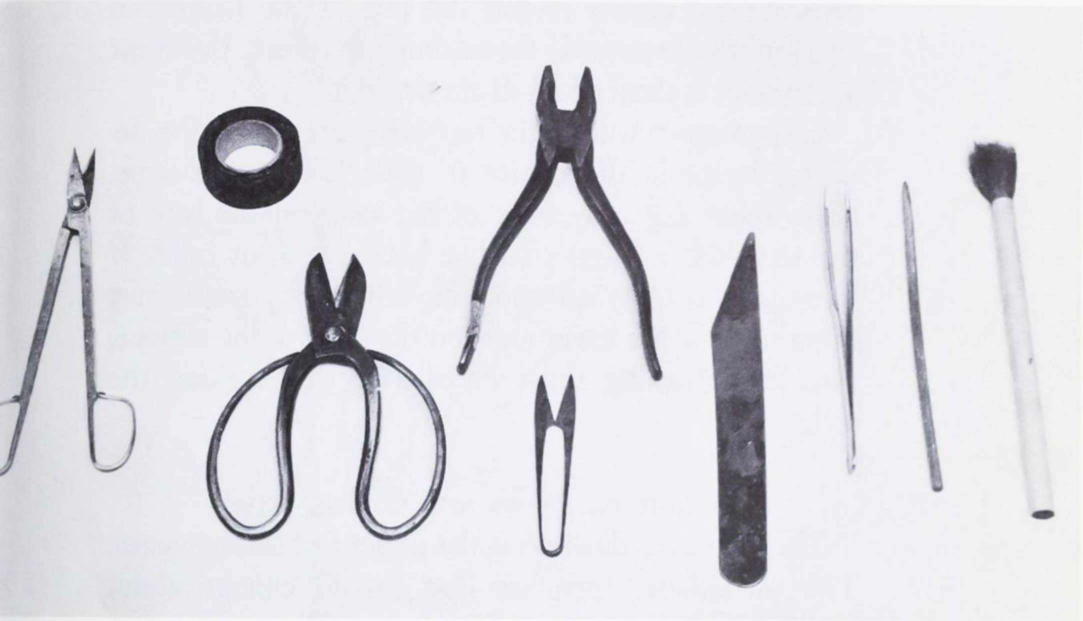
MATERIAL for bonsai can be acquired in three ways: you can collect trees from the wild, buy nursery stock, or propagate plants at home. However obtained, material should be well rooted, well branched, and sufficiently woody to allow the final form to be clearly defined. It is not true that twenty to thirty years are required to develop a bonsai of quality. If a healthy and vigorous tree is selected, a good bonsai that will live for years can be developed in a few hours.

The trunk of the selected specimen should be thick, the surface roots, if exposed, spread evenly around the base, and the branch structure well formed. The leaves should be small, and the twigs should taper gracefully from the limbs.

The best time to start work on a bonsai is in the spring as plants emerge from dormancy and rising sap stimulates strong growth that may continue for a month or more. At this point, a tree is in good condition to withstand the shock of pruning and wiring and to regain health quickly. In most climates heavy root pruning and potting are safe through midsummer, although, at that late date, trees take longer to recover and start growing again. After early August, there is considerable risk; a plant is likely to die if there is not time to develop new roots before it goes dormant. For most species the formation of new roots requires at least six weeks, There is, therefore, a definite time limit on potting unless you have a heated greenhouse, with which you can successfully develop bonsai at almost any time.

SELECTING THE STYLE

The first decision involves the style. Set your tree at eye level and turn it slowly to examine it from every angle. Sometimes the tree itself dictates the style. For instance, a straight-trunked fir is obviously suited to formal upright; a spreading juniper with a hooked trunk forms a natural cascade, and its existing trunk line is wisely accepted. With other trees there may be a choice.



TOOLS

The tools in the photograph are used in working with bonsai. Some are Japanese and others American; however any good garden shop can supply you with the basic tools. Substitutes can be made. For example a pencil or blunt ruler may be used in place of the chopstick if they cannot be obtained locally. From left to right, they are: long handled pruning shears, black electrician's tape, heavy pruning shears, wire cutters, small leaf trimmers, flat knife, tweezers, chop stick, and brush.

A twisted apple might be either informal upright or slanting. The position of branches may also be a determining factor.

After a style is selected, it is important to determine which side will become the front of the tree. A properly chosen front clearly reveals the line of the trunk and also sets the horizontal dimensions. In effect, the front appearance is proof of a well-chosen style.

Or perhaps it will be the root structure that is the deciding factor in the choice of style. To expose large, heavy roots, dig away some of the soil near the base of the tree with a blunt tool like a chopstick or ruler. If there are no roots on one side, tilting the trunk may bring some of the lower roots on that side to the surface, thus strengthening the root pattern, but limiting the style.

BRANCH PATTERNS AND COPPER WIRE

The next consideration is the pattern of the branches. The three basic branches that should emerge about one-third up the trunk are first chosen. All growth below them is then pruned away. Above them, excess growth that detracts from the overall form is also pruned off, and usually most of the dead wood is removed. However, don't be hasty in eliminating *all* the dead wood; you may find that some dead growth contributes to the aesthetic effect.

Shorten over-long branches and, where branches occur directly opposite each other, remove one of them in order to create a proper asymmetric design. Make clean cuts that leave no stumps so that bark will heal over and there will be no scars.

The final design is developed by wrapping copper wire around trunk and branches and then bending them into position. Copper wire is pliable and easy to use, but it hardens after being twisted, thus holding trunk and

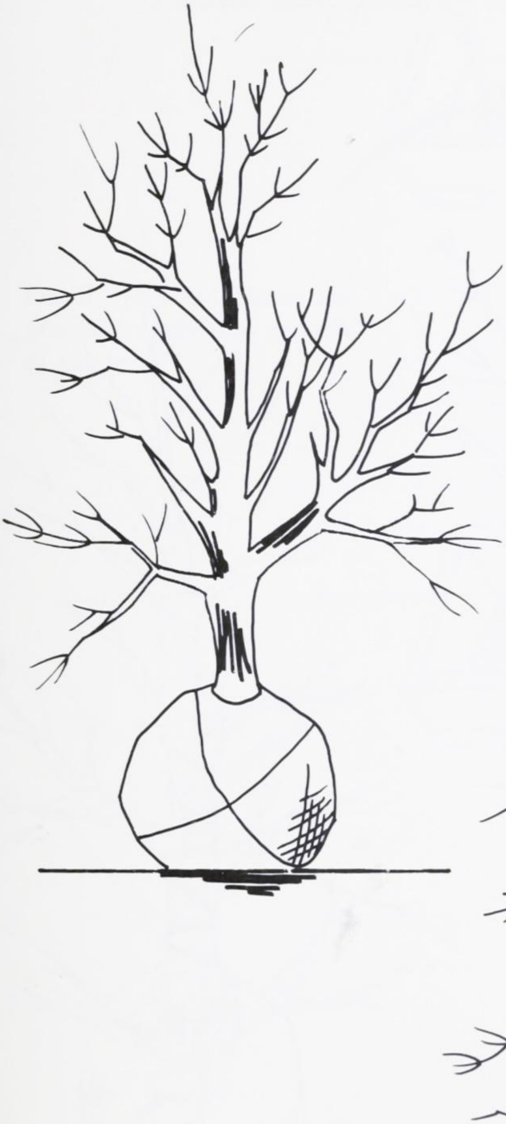


FIG. 4 *A balled-burlaped dormant tree.*

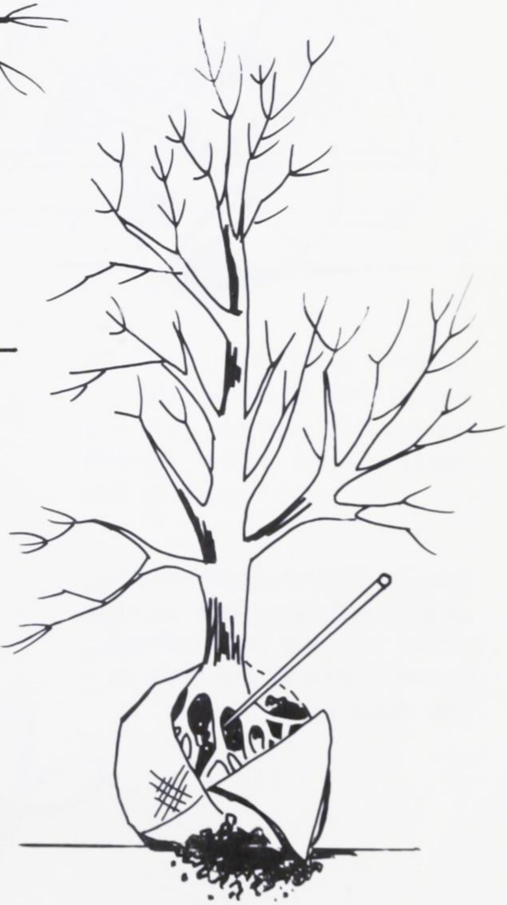
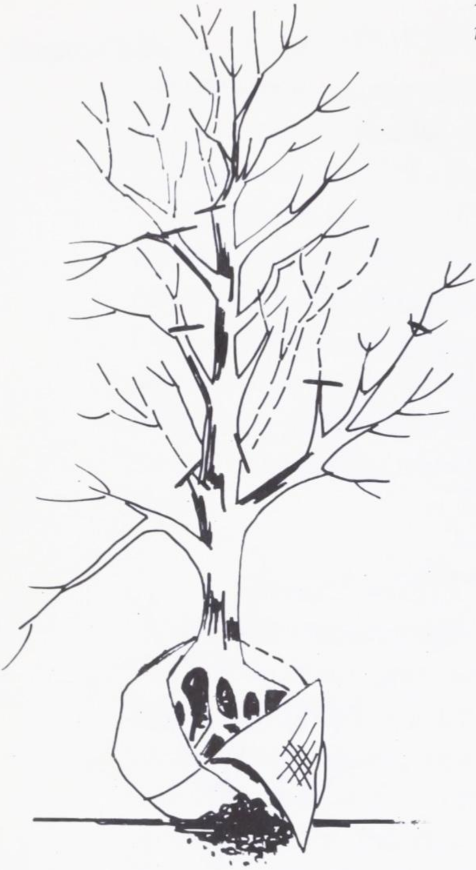


FIG. 5 *Surface roots exposed by removing soil at base of trunk with chopstick.*

FIG. 6 *Drastic pruning to eliminate opposite branches.*



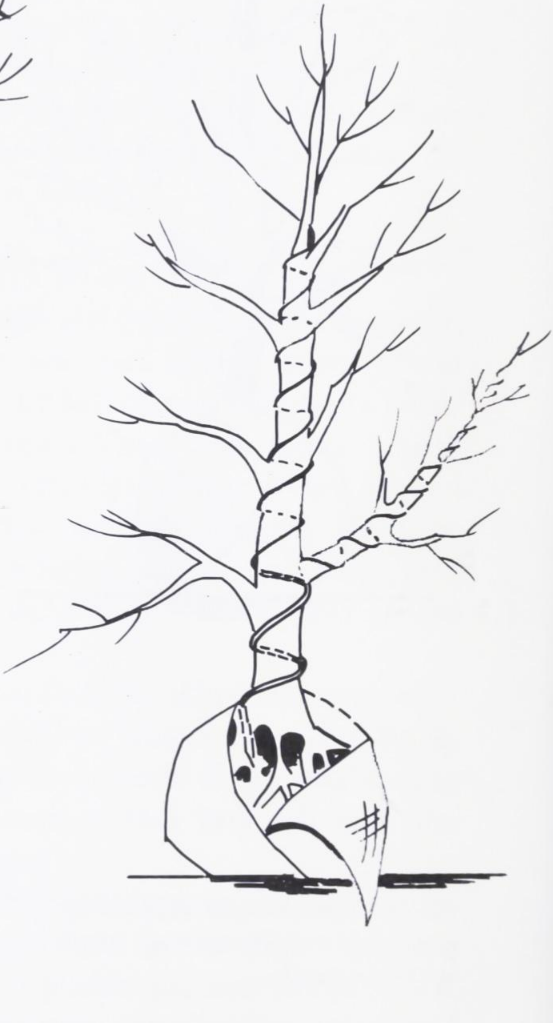


FIG. 7 *Wiring branches for shaping. Copper wire is inserted into soil and spiraled around the trunk and limbs to give shape to the bonsai.*

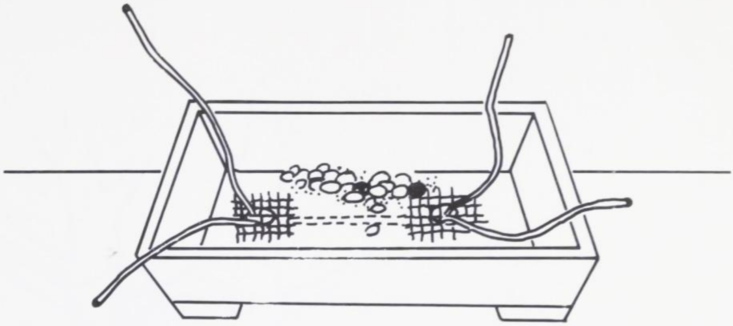
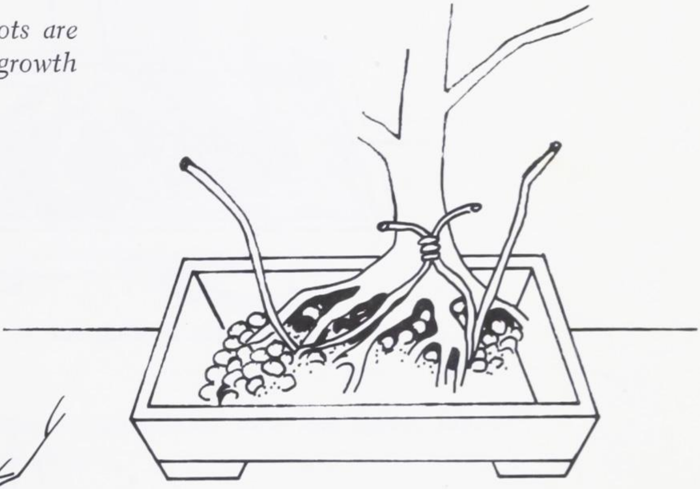


FIG. 8 *(Below) Roots are pruned to encourage growth of fine roots.*



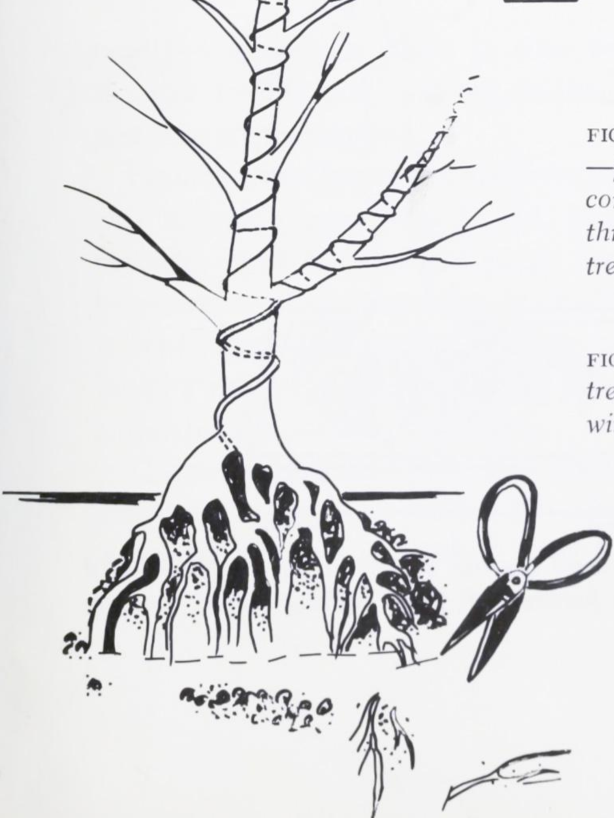


FIG. 9 *(Top) Prepared container —plastic screen to hold soil in container, copper wire inserted through bottom holes to secure tree in place.*

FIG. 10 *(Center) Placement of tree by fastening with copper wires.*

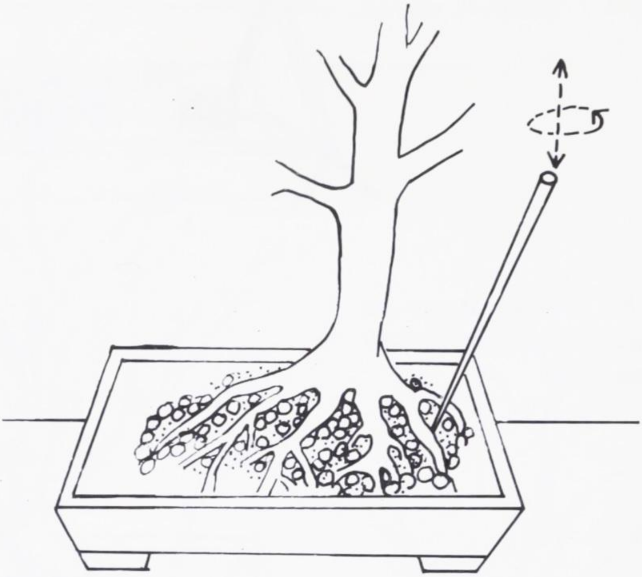


FIG. 11 *Jabbing in main potting soil to fill air spaces around roots.*

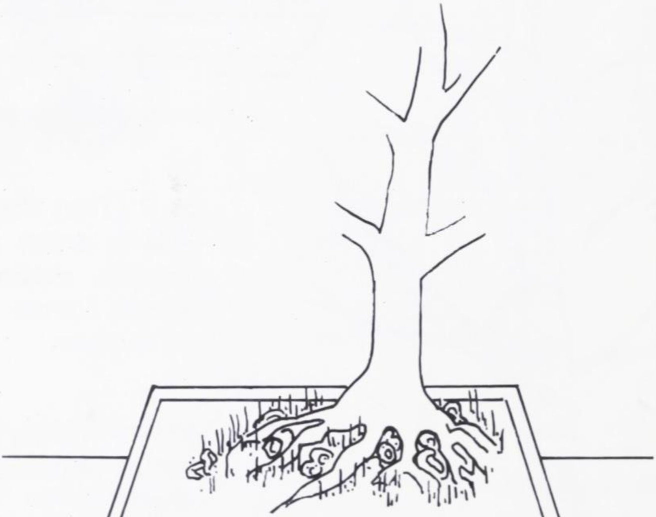


FIG. 12 *Planting moss on the surface to give a more aged appearance and to prevent soil from washing out of the container.*

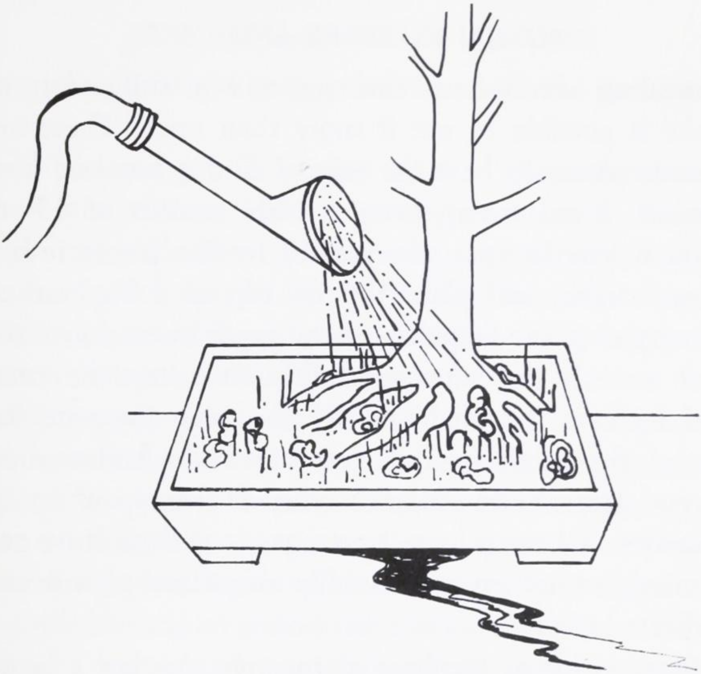


FIG. 13 *Watering bonsai from above with fine spray, excess draining from bottom holes.*

branches securely in place. In time the woody cells of the tree modify and, without further wiring, the new positions are maintained.

From a bonsai nursery or hardware store, obtain copper wire in four gauges, Nos. 12, 14, 18 and 22. You will probably need the heaviest gauge for trunk and main branches, smaller gauges for branchlets. In each case, select the lightest wire that will serve your purpose. Too heavy a wire may injure bark, too light may not induce a limb to take the shape you want.

Copper wiring on a tree is so bright it draws undue attention to itself. To subdue the color, it is heated, or annealed, as we say, until it turns a dull, cherry red.

Annealing also softens the copper wire sufficiently to make it possible to use it more than once. There are various places to heat the wire. I find a fireplace convenient. I cut twenty-five to thirty strands of 15- to 18-inch lengths from the spools, tie the pieces into a loose bundle, and place this on top of a big wad of newspaper in the fireplace. As the paper burns down, the heat anneals the wire sufficiently to soften the color and increase the pliability. By the time the wire has cooled, it is ready for use. You may find a barbecue pit a good place to anneal your wire, or the top of an incinerator. A heated burner on a gas or electric stove can be used but not easily since only one strand of wire can be heated at a time.

Start wiring at the base of the tree. Anchor a heavy main wire, say 12-gauge, several inches into the soil at the back of the trunk; then spiral it evenly up and around the trunk. Next, select fairly strong secondary wires, about 14-gauge, and run these around the trunk and out to the tips of the major branches. Use lighter wires, 18- or 22-gauge, for the smaller branches. Pass the side wires around the trunk, but do not attach them to the main wire, since this would look unsightly and would certainly cause bark wounds.

You will be using just one wire for two branches at different levels. In between, wind the wire spiraly around the trunk, paralleling but not crossing the main trunk wires. Figure 7 shows how all this wiring is managed. The spiraling may be clockwise or counter-clockwise, whichever way gives greater tension and support to a limb. Wires should be in contact with branches but not wound so tightly that they interfere with the circulation of sap.

When you get the anchor wires in place, bend each limb into position. Exert a gentle pressure with thumbs and fingers. Gentle is the keyword, no matter how stubborn a branch may be. If you yield to the temptation to force it, you will probably snap the limb, break the cambium layer, and so kill the branch.

Since wires remain on bonsai when they are displayed, neat, unobtrusive wiring is essential, and this takes practice. If you have difficulty at first—everyone does—practice on dead branches instead of on your valued living tree. Soon your fingers will learn the technique, and wiring will become an almost unconscious operation. When you are learning, it may also help to work with heavy twine instead of wire. Twine can be put on and taken off several times without damage to a tree. It is difficult to change a poor pattern worked out with wire; rehearsing with twine is much easier.

SECOND WIRING

How long the first wires are left in place on a potted tree depends on how fast the tree grows. As limbs expand, wires get tight; if they are not removed in time, the bark begins to grow over them. This results in ugly depressions in the wood, sometimes in scar tissue. True, ridges eventually smooth over and scars disappear but it takes years. Wiring must therefore be watched carefully.

The first wiring will not be sufficient to impose the design on most branches. They will need another wiring, but don't attempt the second wiring until the tree has had a rest. Physiologically this is necessary because wiring compresses or extends—in some way distorts—the internal vessels that carry nutrients from roots to leaves. Replacing wires immediately is likely to block vessels altogether, and the branch will die. Letting a branch remain free of wire for several months strengthens it; then it can be safely flexed again.

Cell alteration is a slow process, the rate depending on the species, but eventually changes in the cells bring a limb permanently into place. A tree may be considered a mature bonsai when all branches have been brought to the desired positions and will hold there. Shaping is then only a matter of light pruning. Except for new growth, further wiring is seldom necessary.

PRUNING OF ROOTS

After a tree is shaped and wired for the first time from trunk out to twig ends, it is time to cut back the roots. Root pruning stimulates growth of fine fibrous rootlets. If you reverse the procedure and try to wire *after* potting, you are bound to jostle roots newly set in the soil and perhaps create air pockets there. All this is injurious to pruned roots and likely to result in the death of a plant.

Before you cut roots, pry off one-third of the old soil from the root ball with a blunt stick. Then cut back the long loose roots a third. Keep the fibrous filaments attached to larger roots near the trunk because these will sustain the plant while new roots are forming. After root pruning, a plant is ready for potting.

PREPARING THE CONTAINER AND POTTING

Select the container. Then cover the drainage holes in the bottom with small pieces of plastic screen. These prevent soil from escaping but do not interfere with the drainage of water. Next, to stabilize the root ball in the container, insert through one drainage hole, from above, several lengths of copper wire. Draw the wires under the pot and up through another hole. If there is only one hole, wrap the wire around a small stick to anchor it to the underside of the pot. To provide good drainage, spread a layer of very coarse sifted soil over the bottom of the container. Over this layer, spread medium coarse potting soil. Then the container is ready to receive the tree.

Settle the tree in the container with a twisting motion to eliminate air pockets in the soil. Pull the anchor wires diagonally across the root ball and twist together the opposite ends until the tree is firmly set. Then trim off excess wire and push the ends back into the soil. This technique holds the plant exactly where it belongs and insures against its being knocked over.

Pour in potting soil little by little around the ball of roots. Work it in with a blunt instrument as firmly as you can so as to fill up possible air spaces. Even a small air pocket around a root can result in an area of rot, and this is particularly dangerous for a newly potted plant.

After the potting soil is well settled, brush away any excess. Sprinkle fine top soil over all. Even this off and put dry powdered or fresh moss on top to prevent the washing out of soil when the bonsai is watered. You can sprinkle the powdered moss but fresh moss is first well moistened, then pressed into place with a spatula. It takes time for the powder to become green moss but the fresh moss immediately enlivens the appearance of the tree. Work it in between roots, always leaving their upper surfaces exposed to give an older look. If you have a variety of mosses and lichens, you can create a miniature landscape under a tree; with the powder, you have to be content with what comes up.

FIRST WATERING

Now is the time for the first watering; soak the soil well by letting the container stand in enough water to reach just below the rim, and lightly spray the top of the tree. The watering schedule for the next few days is important. If you cut off only a few roots, water again on the second or third day. You can tell when roots begin to take up water again by the dry look of soil near the trunk. If you have cut off many roots, do not water for several days after the original immersion. Heavily-pruned roots are not in condition to absorb much water and are thus susceptible to rot.

For about three weeks after potting, protect your bonsai from hot sun, wind, and driving rain. When you see new growth, you can safely place them in full sun.

4

Elements of a Good Soil Mixture

THE composition of the soil is an essential element in the successful culture of bonsai. The various elements, the size of the particles, the proportions of the mixture are all to be considered. The container and its contents represent home for a bonsai, and the conditions must be hospitable if a tree is to thrive.

FUNCTIONS OF SOIL

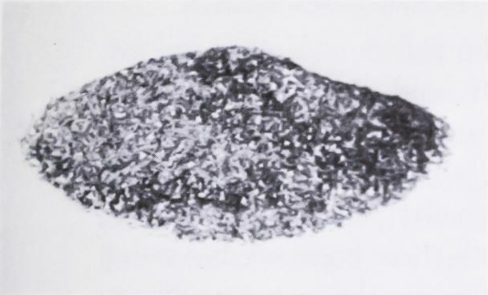
It is the soil that supplies most of the moisture for growth and maintenance, the mineral elements for food production, oxygen for roots and finally an anchor for the plant. The small amount of earth and the shallowness of many pots make stability a problem, but this is solved by wiring the root ball to the container, an important step in potting.

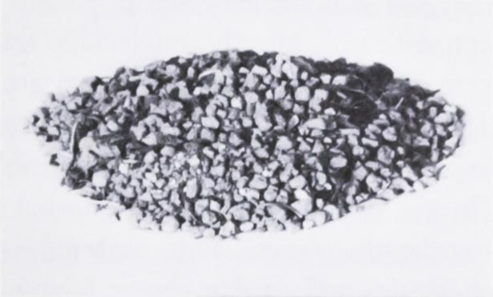
Through years of experience the Japanese bonsai specialists have accumulated considerable knowledge about the soil requirements of potted trees. Traditionally, they recommend mixtures of clay, various potting soils, and sand mixed in proportions to give each tree conditions comparable to those of its habitat. English texts, based on Japanese methods, too often include exotic materials; or it may be that the translations are at fault so that we do not recognize what would otherwise be familiar.

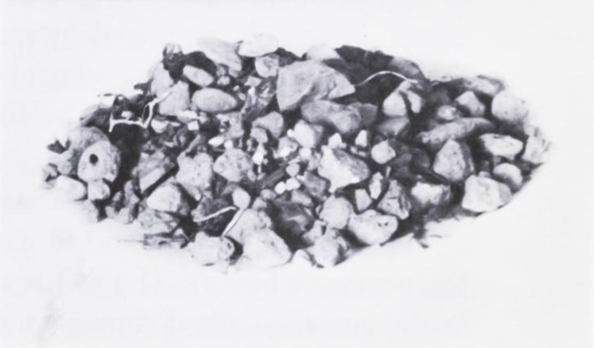
The advanced bonsai enthusiast may want to know about Japanese soil formulas, but most of us are satisfied, and successful, with a basic mixture of one-third each of the fundamental ingredients—clay, garden soil with humus content, and sand—with some nutritive substance added in small quantities. In only a few cases does the health of a tree, its ability to flower, or some special condition demand a different mixture.

Japanese soil formulas tend to give greater porosity to soils for trees that thrive on small amounts of water, as the pines. However, the same results are possible with the standard mixture if less water is given. You can, therefore, provide more sand or apply less water according to your convenience.

BASIC SOIL SIZES


Top soil


Main soil


Bottom soil

IMPORTANCE OF CLAY

Clay particles are the primary element in potting mediums. In most areas, subsoil dug from about three feet down and dried provides hard clay pellets. These may be dried, graded, and stored until needed. Clay is somewhat chemically active and this makes it vital to nutrition. The pellets also act like little sponges or reservoirs of water for the fine roots that grow out to surround them. Between the pellets and other soil elements are tiny spaces that hold moisture right after watering. As the soil dries out, air replaces water in these areas, and rootlets then begin to absorb the water along with the minerals held in the clay pellets. The clay thus helps to supply a bonsai with three basic needs—water, minerals, and oxygen. It is the clay that permits a bonsai to live in the sun with only one thorough daily watering.

It is, of course, rarely possible for a bonsai grower to excavate for clay pellets and there is now no commercial counterpart; however, I have discovered a possible substitute of sandstone, which is composed of what appear to be small sandstone pieces. This material is available in some nurseries and garden shops. I have potted plants using only sand and humus with sandstone for the clay portion. This experiment is proving somewhat successful, I believe it will solve the problem.

VALUE OF TOP SOIL AND HUMUS

Top soil from a well-worked garden usually contains the necessary humus. The soil is spread out in the sun to dry and then sifted through screens of various sizes. I then discard the powdery, silty residue and use only the top-soil pellets. These dry out more quickly than subsoil pellets and they contain more nutrients. For most trees the two types are mixed in equal proportions, but fruiting and flowering species feed heavily and so require up to 60 per cent of top-soil material. On the other hand, evergreens need less food and so a mixture for them includes more subsoil clay.

If the top soil is not rich in decomposed organic matter, humus is added in the form of leaf mold or compost. This is also dried and sifted. Generally, only a very small amount is used, as humus is high in nutritive value, too stimulating for most of the plants that are to be kept dwarf. However, willows and fruiting and flowering plants require up to a quarter-part of humus in the potting mixture, for they are indeed heavy feeders.

SAND AND DRAINAGE

Sharp clean sand (not the salty seashore type) encourages the branching of roots. As a rootlet strikes a grain of sand, it turns in another direction, and in a short time a fine network of feeder roots results. Without such roots, twigginess and dense leafing do not develop, since the two systems, one above and one below ground, support and promote each other.

Sand is also a factor in drainage, and adequate drainage is most important. If water does not run off in a reasonable time, soil becomes soggy and the result is an unhealthy tree, eventually a dead tree. In addition to an adequate amount of sand, the best way to assure good drainage is to dry and screen all potting material before use. Dust particles and silt will thus be removed; clogging will be avoided.

SIFTING OF SOIL

Japanese growers use screens of many sizes to sift their soils. Over the years I have found that just four sizes provide the necessary four grades of potting soil. My set of screens is nested so that I can screen the four grades at one time. The screens are of one-half, one-quarter, one-eighth and one-sixteenth-inch mesh. They are stacked one on top of another, smallest mesh on the bottom.

Whatever I am screening, dried clay or top soil, I place in the top screen, a shovelful at a time. Then I shake the screens back and forth until the soil has sifted through all four screens. The four grades are stored separately in twenty-five gallon metal cans. The silt that falls through the smallest screen is discarded and *never included* in potting mediums. The big particles in the half-inch screen are kept for very large containers. Soil is always stored in a dry place and mixed as needed for each bonsai when it is repotted in the spring.

Soils are sifted for various reasons—to let the warmth of the sun penetrate the mass, to provide good conditions of drainage, to promote retention of moisture as well as circulation of air. From sad experience, I can vouch for the value of sifting. When I started with bonsai, I did not screen soils carefully, and I lost trees that proved, on autopsy, to have rotted roots, the result of too-long-retained moisture. Once I started to sift with care, I lost no more trees from this cause.

SUBSTITUTE SOILS

The apartment dweller, who grows hardy bonsai indoors the year round and has no access to a garden, can use one of the commercial potting soils now available at garden and hardware stores as well as supermarkets. This packaged soil, guaranteed sterilized, may also suit other bonsai enthusiasts who do not care to take the trouble I do with soil mixtures. The commercial product should also be dried and sifted before use and, since it rarely includes clay, perlite or something similar should be substituted and sand or small gravel also added. This is not always available from the same source as the soil but can always be found in pet shops.

Since these commercial materials usually lack the nutrients of natural clay and compost, you will need to supplement them with more liquid fertilizer than you would otherwise apply. The soil mixture might then consist of three-quarters packaged soil and one-quarter sand or gravel. Plants in active growth potted in this mixture should be watered with a liquid fertilizer solution about once a month.

5

Care of Bonsai Indoors and Out

MANY tender tropical and subtropical plants, if they are of a woody type, can be trained as bonsai and grown like most other house plants. The possibilities of this tender material for bonsai are only just being realized, and enthusiasts who have become experienced with the hardy apple and pine are now experimenting with the geranium, gardenia, and bougainvillea. In winter when hardy bonsai are in the cold frames, tender plants are a delight. As bonsai, they are a year-round pleasure.

Except in winter, the culture of tender and hardy types are much the same. In summer both are usually kept on waist-high tables to facilitate viewing and care and also to give the free flow of air and the full sunshine that are essential to the health and vigor of most of them. Only some of the tender varieties may be safer on porches or terraces or in a lath house.

HOW TO WATER BONSAI

Watering is one of the most exacting tasks until a little experience makes it fairly routine. In nature a tree can search far and wide for water; in a container the soil area is severely limited. If it dries out, a bonsai exhausts its supply of moisture. With the necessarily granular type of soil, this happens quickly, a condition that makes proper watering most important. It cannot be neglected at any time. Contrary to popular opinion, the dwarf character of bonsai is not due to scarcity of water, at least not in cultivation.

Bonsai are watered thoroughly almost every day, even in humid weather. Only when it rains can the watering of outdoor plants be omitted. Indeed, in dry and windy weather, bonsai may need watering twice a day, since wind causes fast evaporation from leaves. If moisture is not quickly replaced, the plant is apt to die.

Bonsai are watered on a regular daily schedule either in the morning before ten o'clock or in the afternoon after three. Watering in the heat of the day causes scorching and spotting of the leaves of many species and this, of course, mars their summer beauty.

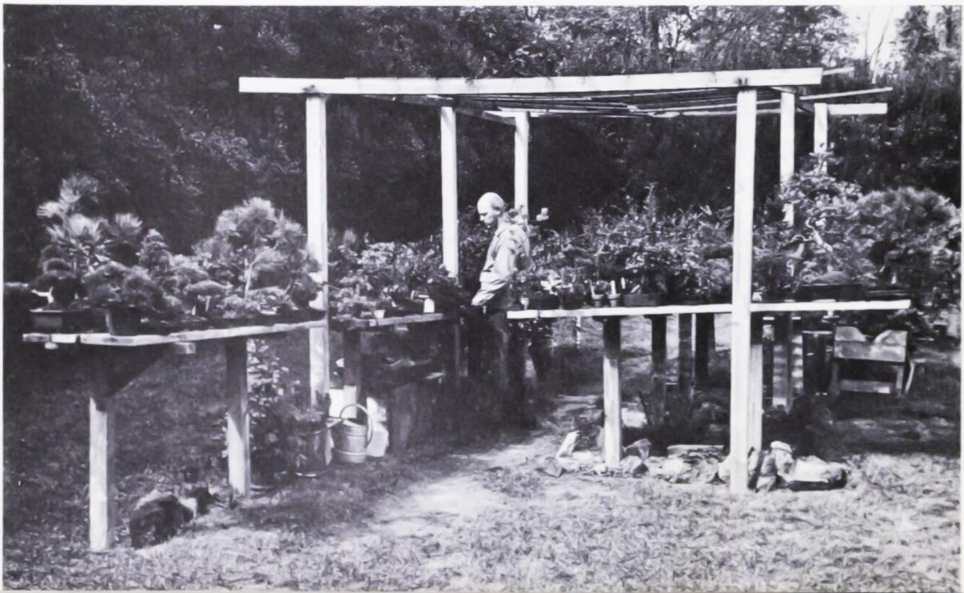
There are several methods of watering outdoor bonsai.

If you have time, water them individually with a fine-nozzle watering can or with the fine spray of a garden-hose, which may be easier. Either way, each tree must be watered thoroughly. A fog nozzle, available in most lawn and garden shops, does a good job because the spray pressure usually dislodges any insects from foliage. When you water, notice whether water is coming through the drainage hole of the container. When it does, it is an indication that moisture has saturated the roots and the plant has had enough. My own method is to spray containers in succession until water runs out the drainage hole. Then when all the trees have been watered, I return to the first plant and repeat the process in case one of the plants has not had enough water.

In extremely hot weather, willows and wisteria need an exorbitant amount of moisture. When I leave for business, I place these in low water-filled trays. When I return every drop of water has been taken up and must

TABLES FOR DAILY CARE

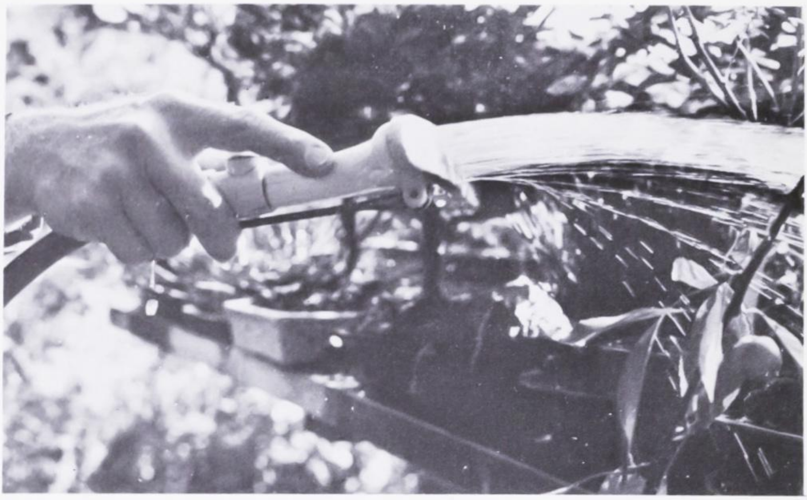
Shade house for plants needing protection from sun. Tables are at waist height to facilitate daily care.



Allow space between containers for sunlight and movement of air.

be quickly replaced. Other plants that use up water fairly quickly, like miniature bonsai, are best set on sand kept moist in a shallow basin. When it gets cool toward fall, there is no further need for these precautions and all plants are watered routinely.

With indoor bonsai, the hose spray is impractical but daily inspection and usually daily watering are necessary by other means, perhaps with a fine spray from a florist's syringe. Again you know that enough water has been given when excess seeps through the drainage hole. The dry air of some houses and most apartments can be very harmful to bonsai unless the humidity is somehow increased. Misting tops once or twice a day with a houseplant fogger helps. Placing bonsai on beds of moist sand in shallow plastic or metal trays fitted to windowsills is both helpful and decorative.



Bonsai are watered daily using the fine spray head of a garden hose.

SUNSHINE AND AIR

Sun is required for the production of plant food. Insufficient sunlight results in weak foliage and eventually a sickly plant that cannot survive. In spring and autumn, bonsai can stand sun throughout the day, but during the summer heat most deciduous species require protection from direct sun after two o'clock in the afternoon. The foliage suffers and heat is absorbed by the dark-colored containers causing damage to the roots. Pines are an exception; they prefer somewhat drier conditions.

Sun is important for plants but fresh air is also necessary. Outdoors, air circulating through foliage promotes strong, healthy growth, and acts as a deterrent to disease. A strong wind can, however, knock down bonsai, particularly cascading types, and can also tip over containers with narrow bases. To avoid such damage, tie down containers with cord or rubberized wire, looping it several times around a table and over the top of the containers. Secure them with a sturdy knot to stabilize the bonsai without marring the container.

Where there are no facilities for growing hardy bonsai outdoors, they can be grown indoors, provided a cool place, say under 72 degrees F. can be found, and there are enough sunny windows to accommodate them. Otherwise fluorescent lights may be an advantage. Some enthusiasts have been successful in growing bonsai exclusively under artificial light, even in New York apartments, but the rooms where they are grown are kept definitely on the cool side. Deciduous trees are brought to dormancy toward autumn by gradually reducing the light until leaves turn color and fall.

Unfortunately, there is no way to supply these indoor-grown bonsai with a source of fresh air comparable to outdoors. Through the warm months, they should be put outside whenever practicable, even if the only available places are cramped quarters on a terrace or fire escape. Here they need protection from strong sun and wind until they become acclimated, usually within a period of three to four weeks.

FERTILIZING

Every bonsai needs enough nutrients to produce foliage of good color—and for some well-formed flowers and fruit as well—but not enough to promote excessive growth. Of the many fertilizers I have tried, those containing trace elements—Hyponex, Miracle-Gro, or Ra-pid-Gro—are best for bonsai. The last has a high nitrogen content and is good for the non-flowering varieties where foliage is to be stimulated. All should be diluted to about half the recommended dosage.

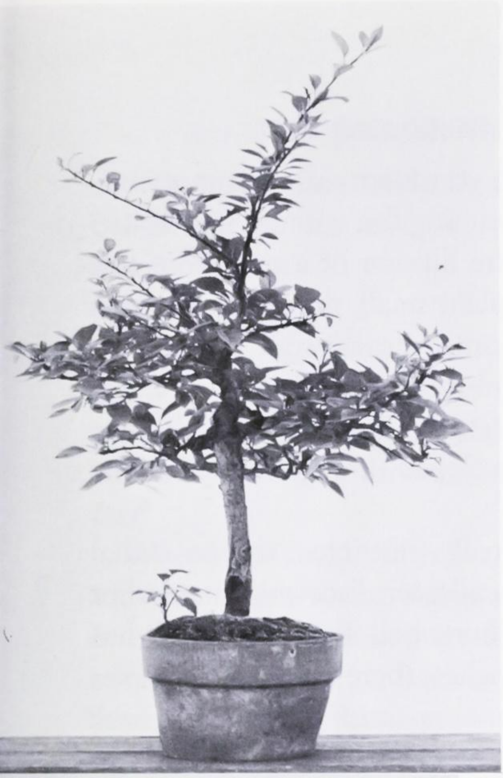
Deciduous plants, such as maples, elms, and hornbeams are fertilized with a dilute solution each week through the growing season—April to October in the Northeast. Feeding is started just as the trees break into leaf. However, a freshly potted bonsai should not be fertilized for at least a month while new feeder roots are developing. Needled evergreens are not fertilized until the year's new shoots have been trimmed. Early feeding for them results in heavy growth and long, unsightly needles. Fertilizing after September produces new growth that may not harden sufficiently before frost, allowing the cold to damage tender shoots and sometimes even kill plants. All evergreen bonsai are fed weekly for three weeks in June and again for three weeks in September while buds are being formed for the next year.

Hardy bonsai grown indoors are fertilized on the same spring and fall schedules. Evergreens, since they stay in leaf through the winter, are given an additional weak feeding for three weeks in February to tide them over until spring. Too strong a solution plus too little sun produces scraggly growth that will have to be trimmed off later. Indoor trees that go dormant and lose leaves are not fertilized until new shoots appear in spring.

IMPORTANCE OF PRUNING

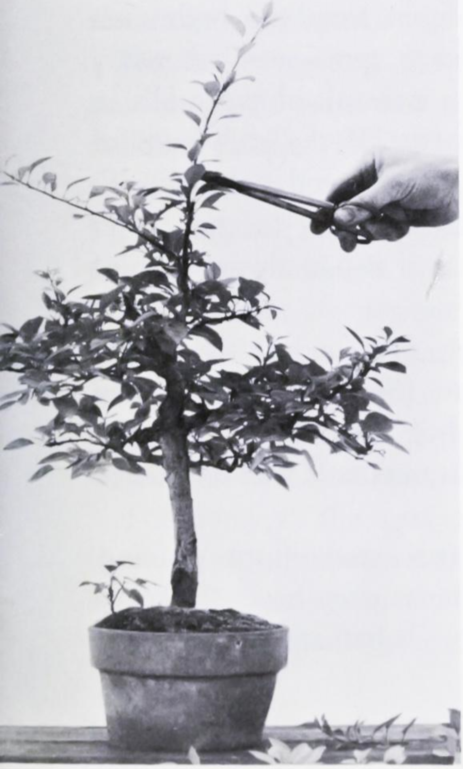
Pruning must go on for the life of a bonsai whether it grows indoors or out. It is the means by which we keep plants to miniature size, just as shearing a hedge

PRUNING

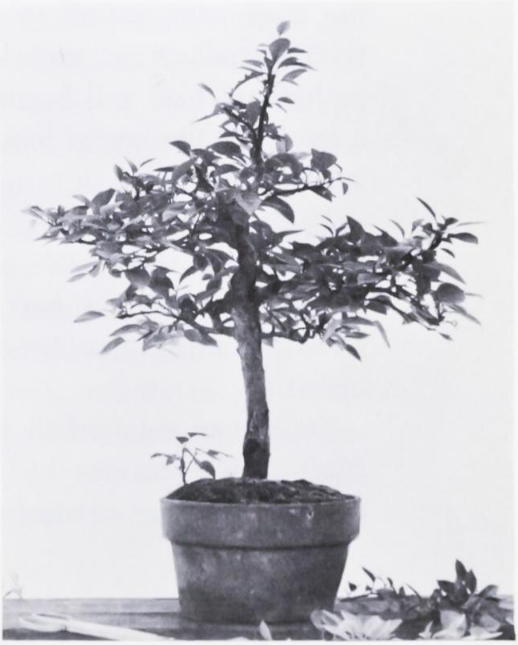


Untrimmed tree showing new shoot 6-7 inches long.

Trim each shoot leaving one or two new leaves at the base of each shoot.



Completely trimmed tree.



maintains the same height year after year. I cannot overstress the importance of pruning for, without it, a bonsai quickly loses form, and the illusion of a miniature tree is lost. Besides keeping a plant small, pruning refines the branch structure into an intricate network of twigs; it also thickens the trunk and forces branch growth where nature may not have intended it. Thus the ultimate form, the aged look, is developed through the technique of pruning.

Drastic pruning is usually restricted to the initial potting. But frequently a collector discovers a natural or nursery specimen with a short, well-developed trunk but long disproportionate branches; there are some examples in Chapter 6. These branches must be cut way back no matter how thick they are if the composition is to develop in scale. On a deciduous tree, new buds soon push through the bark; shoots grow into secondary branches, and, before long, a network of twigs fills in the stark, chopped-off silhouette. If the stub ends of thick branches are carved concave and covered with asphaltum, bark will begin to heal over the cut. After a few years the bonsai looks as if it had always been of miniature size.

With evergreens, however, new buds rarely occur. Some species like pitch pine (*Pinus rigida*) do send sprouts through old bark, but the majority do not. Drastic pruning of evergreens must be a well-considered operation.

Sometimes established bonsai need drastic pruning. After a few seasons a branch may have thickened enough, but the end must go. Or perhaps you have second thoughts about style or composition. If surgery is indicated, the time to do it is when a tree is emerging from dormancy.

TRIMMING NEW GROWTH

Trimming new growth is another matter. It is repeated every growing season and for some indoor trees, serissa for example, trimming is necessary throughout the year.

With broad-leafed trees each new shoot is allowed to add four or five nodes before it is cut back to only one or two leaves. After a short time, dormant buds break out from nodes farther back on the branch. When a new branch is desired, the shoot is allowed to develop. Little by little, this constant trimming produces the twigginess seen in fine, old bonsai.

Needled evergreens grow differently. New growth appears as a pale green bud that expands into a cluster of radiating needles. Before it is trimmed, the base of the shoot is allowed to become stiff but not woody. Then with a twisting motion all but one or two needles are *pinched* out between the nails of thumb and index finger. Needles are *not cut out*. Of all the advice, this deserves as much emphasis as I can give it. Cutting new growth on coniferous trees causes browning of the ends, kills back some of the needles that are left and jeopardizes new bud formation. Always pinch it out.

Trimming at the proper time results in gracefully tapered twigs, but with needled evergreens timing is exceptionally important. Normally, the next year's buds form at the end of the shoot. If the shoot is pinched too late, buds are sacrificed along with it; growth of the limb is effectively checked, as buds will not form if the wood is too old. New buds form on the green wood. They will appear at the end of the pinched-off growth, and the limb will continue its healthy development.

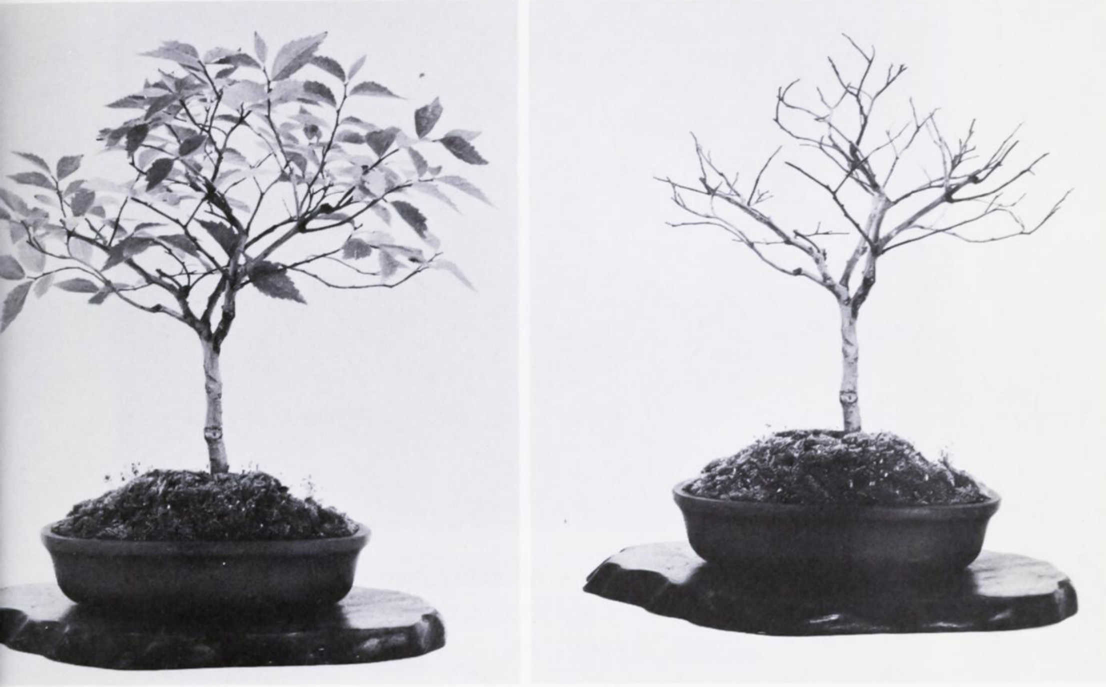
LEAF TRIMMING

Leaf trimming is a special kind of pruning that induces dense twigginess in a relatively short time for a few deciduous species, such as maple, elm, birch, and zelkova. In spring, after the first burst of growth has stopped and stems have hardened, all leaves are cut off at the base, but the leaf stalk is left so as not to damage the dormant bud below in the axil. Within three or four weeks a new set of smaller leaves appears. Leaves are trimmed two or even three times in a growing season. With each successive trimming, dormant buds are activated up and down the branches, and the new sets of leaves soon produce a mass of dense smaller foliage.

Only strong healthy bonsai can be leaf trimmed, and then only after a full month of fertilizing. Constant trimming is a considerable tax on the stamina of a tree and it may kill a less vigorous specimen. Healthy specimens can be leaf trimmed at the end of May, June, and July. Then the leaves that form are half the normal size, or even smaller, and fall coloring is usually much more brilliant.

PEST CONTROL

Bonsai are susceptible to the same pests as those of their larger relatives, but luckily because of their minia-

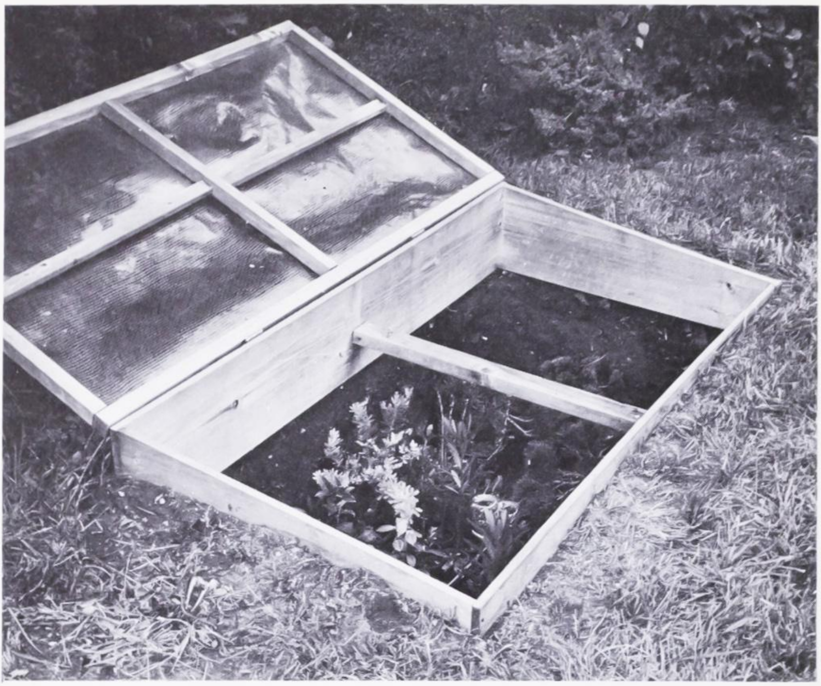


UNTRIMMED TREE

ALL LEAVES REMOVED LEAVING LEAF STALK ATTACHED TO THE BRANCH.

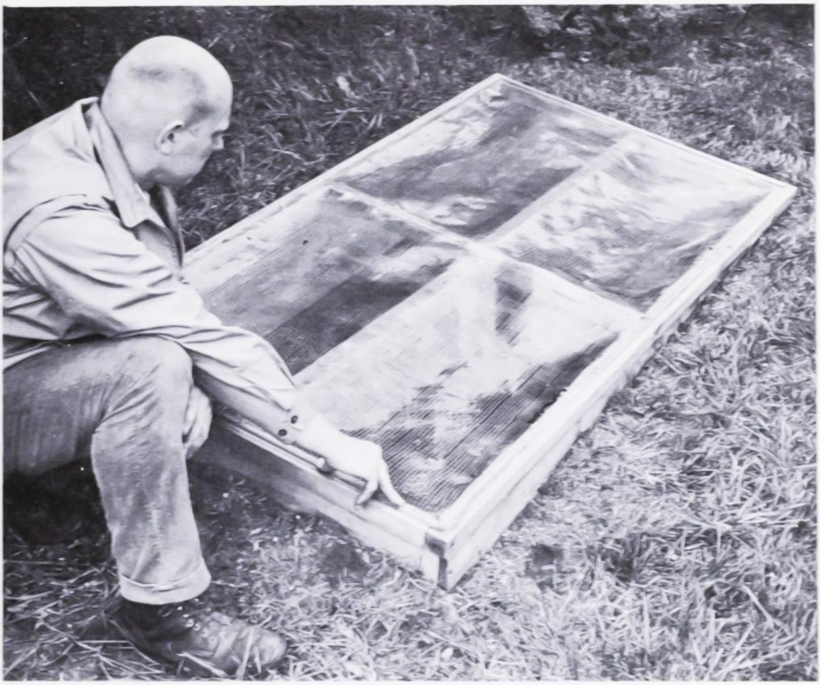
LEAF PRUNING

ture size trouble shows up almost immediately, and prompt remedial measures can be taken. Aphids are the worst pest; they damage leaves and the growing tips of shoots. A mild spray of nicotine sulfate mixed with soapy water usually kills them. Since aphids are often carried to bonsai by ants, spraying table legs with a proper insecticide is a good precaution. Other pests—mealy bugs, scale, rosebugs, Japanese beetles, among many others—may attack bonsai, but with insecticides judiciously used,



Open cold frame made of inexpensive white pine boards, two metal hinges, 2 x 2 frame and plastic covering. Frame approximately 2-3 feet deep.

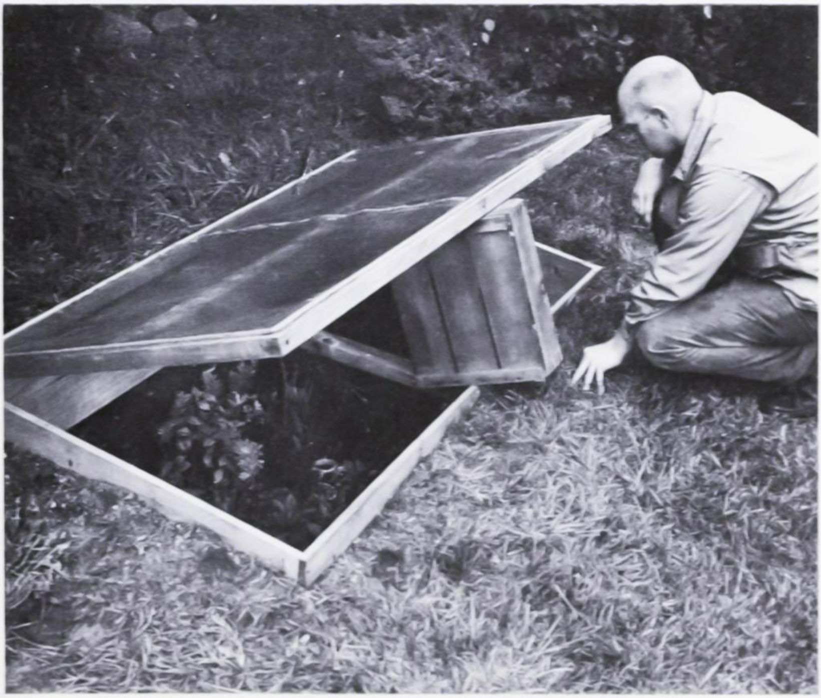
Placing bonsai in the cold frame before winter.



Cold frame completely closed during very cold weather.

WINTER PROTECTION

Partially opened cold frame during mild weather.



say on a monthly basis, control is easy. What is essential is to keep a constant lookout for trouble and then take prompt remedial action. I have found that the Ortho flower bomb controls most pests. It is a combination of insecticide, miticide, and fungicide.

WINTER CARE

Proper care in winter varies with your home situation and the hardiness zone. In warm climates or for bonsai grown indoors, care is about the same as for other house plants. In areas of cold winters, as it is from Canada to Washington, D.C. special protection is essential.

Contrary to common belief, winter cold as such does not harm bonsai. The damage occurs when freezing dehydrates roots. With evergreens, there is also the danger of dry, cold winds drawing too much moisture from the leaves. If the moisture is not replaced, a tree suffers and, where the ground is frozen, it is not possible to give plants water. I have not used anti-dessicant sprays, but they could be of value for evergreens in winter when they are not in cold frames.

The best solution is a deep cold frame. Hardy bonsai are placed in the frame in November or early December and left there for the rest of the winter. Usually weather is mild enough by the end of March to move them out into the open. On warm winter days, when temperatures go above 40 degree F., the cold frame is partly opened to avoid the temperature's reaching 60 to 70 degrees inside. Such heat is likely to force trees into growth and so make them liable to winter kill.

If you have only a few bonsai and there is space in your garden, you can remove bonsai from containers and put them into the ground for the winter. Select a spot protected from wind, and carefully fill soil in around them and tamp it well to avoid air pockets that might accumulate moisture. Moisture, with alternate freezing and thawing damages the rootlets. Mulch soil well up the trunk, and leave the tree then until spring. In some places, mice and rabbits can be dangerous for they sometimes chew bark and twigs in severe winters. A fence of fine chicken wire around bonsai keeps out the marauders.

Bonsai in a cold frame should be checked twice a month to be sure they are not drying out. Snow may be placed inside on top of the containers. As the winter wanes, the melting snow adds moisture to the soil. Or the bonsai can be watered from a sprinkling can. This is dangerous, however, unless the day is mild because freezing water may crack the containers.

Bonsai can also be successfully wintered in a cool greenhouse or cold sun room, if there is some guard against rising heat on sunny days. Warmth causes sap to rise and promotes premature growth, which is damaged when the weather gets cold again.

In every area there are many variations on winter care. You have to assess your own situation and discover the best method. Local nurserymen may be able to advise you, but only if they have some knowledge of bonsai. The best information comes from successful bonsai growers in the same area. Bonsai are not plants that can be neglected at any time of the year.

6

Material for Bonsai from the Wild

BONSAI can be created from almost any perennial plant material, but certain semiwoody or woody species are preferable because of their genetic make-up and habit of growth. Many of our native species have fine branching patterns and small needles or leaves so that a bonsai developed from them will have all parts in miniature proportion. Such wild stock is excellent for bonsai and as good, or even better than the Japanese species traditionally selected for bonsai. I think of the eastern red cedar, a small-needled, shaggy-barked, easily-trained species that takes readily to pot culture because of its fibrous root system. It has as many virtues for bonsai as any evergreen. Although it is a common wilding over perhaps a third of the country, it is hard to locate in nurseries.

I am partial to indigenous plants because more than any others these can communicate a sense of locale. The suggestion is subtle, but the development of native material seems to me to make the difference between fine original American bonsai and simple reinterpretation of the ancient Japanese forms.

Local varieties, especially the understory trees and shrubs (plants growing under larger plants) from the edge of woodlands, are too often ignored. Yet they have outstanding possibilities for bonsai. We have the small-leaved redcedar and hornbeam, varieties with charming flowers like the shadbush, spicebush, and nannyberry. Winterberry, when free of leaves, is bright with scarlet berries; the maleberry, a huckleberry relative, holds clusters of gray-green fruits throughout the year. Our Northeast deciduous trees are the glory of autumn with the colorful foliage of brilliant red maples, canary-yellow birches, and maroon-foliaged blueberry shrubs that hug the ground. And these are only a very few of the native treasures well suited to bonsai.

Naturally dwarfed plants are prized in Japan, and these were probably the source of the original bonsai. There is also an unlimited number of natural dwarfs if you have the patience to search for them. But when you collect, be mindful of proprietary rights and laws. Always get permission from the owner or the state before scouting fields and woods to dig up specimens. I have located fine specimens of apple, eastern redcedar, hornbeam, pitch pine, winterberry, beech, willow, blueberry, laurel, hemlock, black birch, and bittersweet vine, on abandoned farm land. There the soil that drove out the farmer produces a wealth of ideal bonsai material. Indeed each ecological area offers many typical species, and this list could include a great many more plants.

Not all natural dwarfs are suitable; stunted growth alone will not make a good bonsai. It is the basic form that is the determining factor. When you spot a possible specimen, try to visualize the final composition and estimate what you can accomplish with patient training. If a tree does not have inherent possibilities for a bonsai, don't bother with it.

The best time to look for material is in winter after leaves have fallen and you can see through the brush. Then you can clearly observe the shape of the trunk, and can assess the quality of a design. If the ground is not yet frozen, you can also scratch away the soil to see whether any large surface roots exist. A tree that seems worthwhile can be marked with a piece of white string or cloth to make it easy to find in spring. It helps to jot down location and type of material in a notebook.

WHEN TO COLLECT

The best time to collect is in spring when swelling buds indicate the end of dormancy. The time depends on local conditions and also on species. Some bud out much earlier than others.

Usually a dwarf has a poor root system and should be root-pruned *in place* for several years before it is removed. This pruning will induce new and finer root development. A good method is to prune in place one-half of the old roots the first year. Dig a 6- to 8-inch-deep trench halfway round the plant with a sharp spade. Then fill in the trench with fresh, black soil. This will encourage fine feeder roots to grow out. The next year prune the other side and, repeat the procedure if necessary, although a tree can usually be dug by the third year.

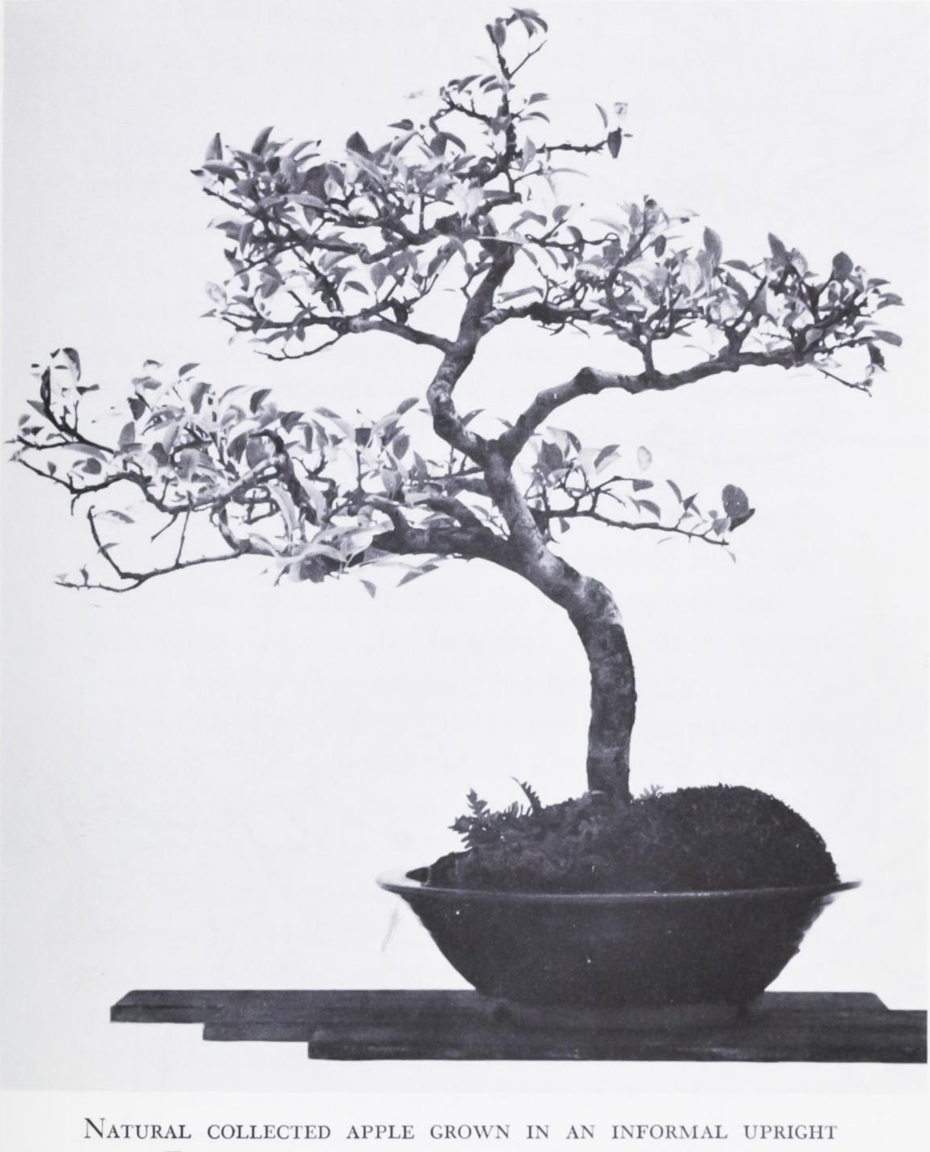
This is by far the safest way to handle a plant, and it is the only way that a tree with a large tap root or an extended root system can be removed and still live. However, this method is not always practical, particularly when the tree is far away from your home. If a tree is healthy and it is possible to remove it with a good-sized ball of roots and soil, you can dig at once and take a chance that it will survive. Dig with care and avoid cutting large roots close to the trunk. Keep the root ball moist by covering it with burlap or plastic and plant the tree in the garden as soon as possible. There you can give it special attention for a year or two until that important fine network of fibrous roots develops.

If the tree has a poor root system or roots too large to cut safely, give it up, unless bulldozers threaten and the tree is destined to die anyway. Some specimens, though attractive, are simply not for collecting.

MY CONNECTICUT FINDS

With the expansion of railroads in the nineteenth century, many New York and New England farmers departed for the fertile midwestern flatlands; others moved into the expanding cities. In time the cultivated fields returned to woodland. Seedlings started up in abandoned orchards and grew unattended for years, naturally dwarfed and excellent for bonsai. Some of my apple trees were located under just such conditions in northwestern Connecticut in the spring of 1958. At that time I could not conveniently transfer them to a garden so I planted each one in half of a large wooden nail keg in a mixture of equal parts of garden soil and sand, the long roots only slightly pruned. The trees were kept in the kegs for three years. By that time a web of fine roots had grown out from the large old ones. The trees were then drastically pruned, wired into basic shapes and potted in bonsai containers. Over a period of about eight years, with a minimum wiring of new shoots, these apple trees developed into fine bonsai, each with a distinct character.

I trained the first tree (see p. 65, also Figs. 14-16) to an informal upright style, utilizing the natural pattern of the trunk, although in the field it grew almost straight up and down. As I fashioned it into a bonsai, I removed one major branch and wired a secondary branch with a finely tapered terminal to extend the line of the trunk. The main branches were wired into more nearly horizontal positions to force new buds and initiate the development of a fine network of twigs. The branches are arranged in sets of three around the trunk, No. 1 to the



Natural collected apple grown in an informal upright style. Final shape given to bonsai after drastic pruning and wiring. Tree needs further wiring and shaping as branches have a tendency to grow toward the light source. This tree won first prize at the International Flower Show in New York City in 1963.

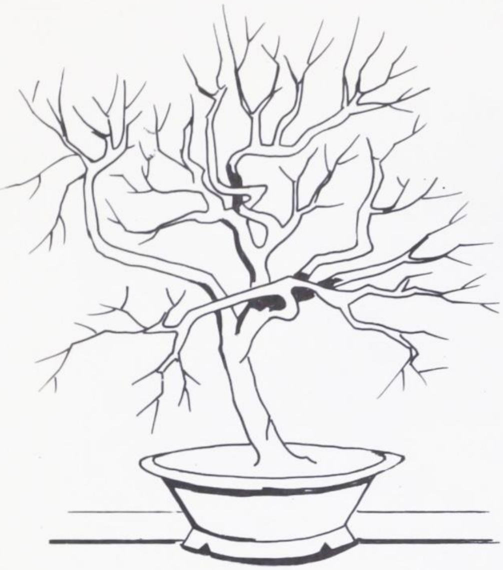
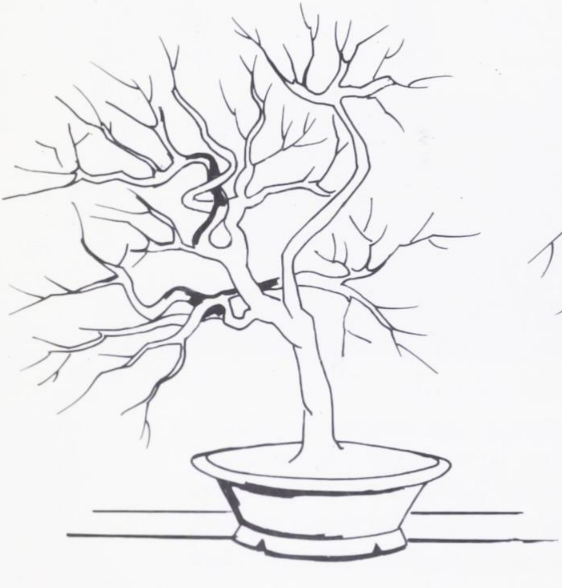
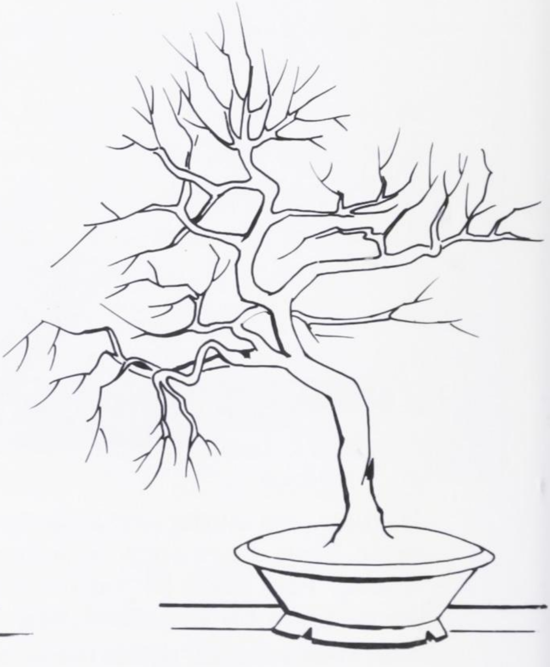


FIG. 14 (*Top*) *Collected apple tree without pruning or shaping with wire. Major branches crossing each other.*

FIG. 15 (*Lower left*) *Tree turned to opposite side to give better definition of trunk line.*

FIG. 16 (*Lower right*) *Tree after removing large branch and drastic pruning of major branches.*

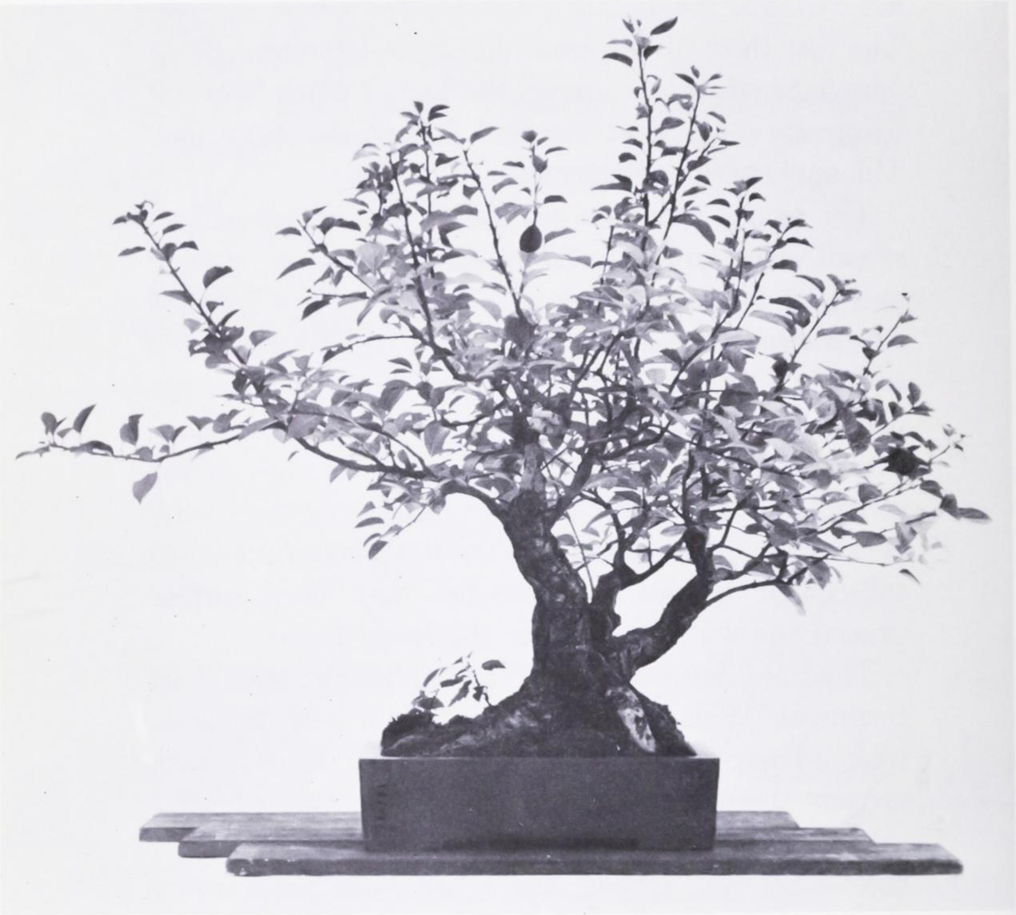




left, No. 2 to the right and No. 3 to the rear of the tree. The first third of the trunk has been left exposed. As dormant buds break through the bark, I pinch them off before they can grow out and destroy the clean line. This apple tree has blossomed charmingly.

The second tree (see pp. 68-69) was also developed several years ago by drastic pruning, wiring, and potting in a large Japanese mirror-style container. The tree had a handsome, naturally twisted trunk, but it was too tall and had to be shortened. When I cut off the greater part of two major branches, a potentially ugly Y formation appeared so I planted the tree at an angle in the container. This had the effect of minimizing the Y and, at the same time, accentuated the tree's graceful line. In subsequent seasons the branches have been further pruned and wired to enhance the basic shape.

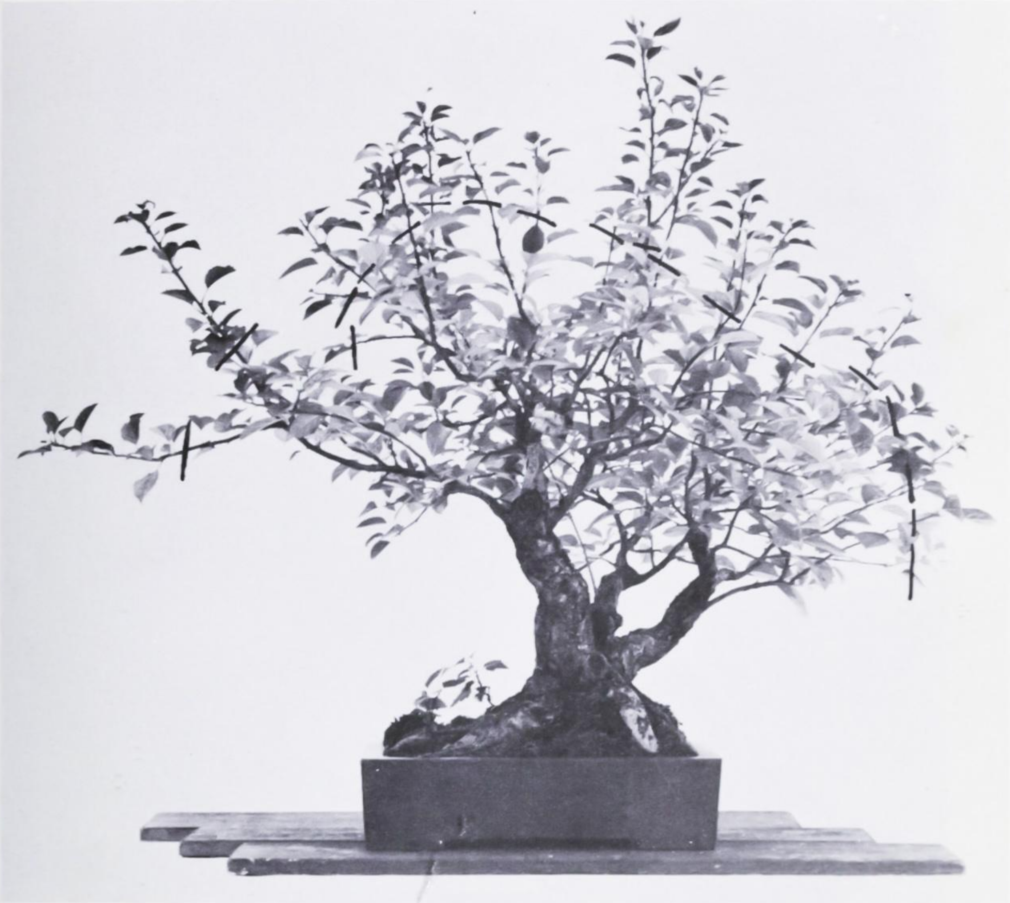
The third tree (see pp. 70-71) has had the same basic treatment. When it was potted, several large branches were completely removed, leaving only three naked, severely shortened but solid branches radiating from a thick, tapering trunk with strong, woody roots. Thus the basic shape was defined, but it had to be filled in. By pinching out the ends of the branches, dormant buds were forced into growth just below. The new growth was allowed to extend and harden up before it was wired to form the secondary branch structure. This bonsai was only recently created. The photo on p. 70 shows it in the second growing season after the original potting, and demonstrates how quickly twigginess can be developed, even after drastic pruning, and how little time

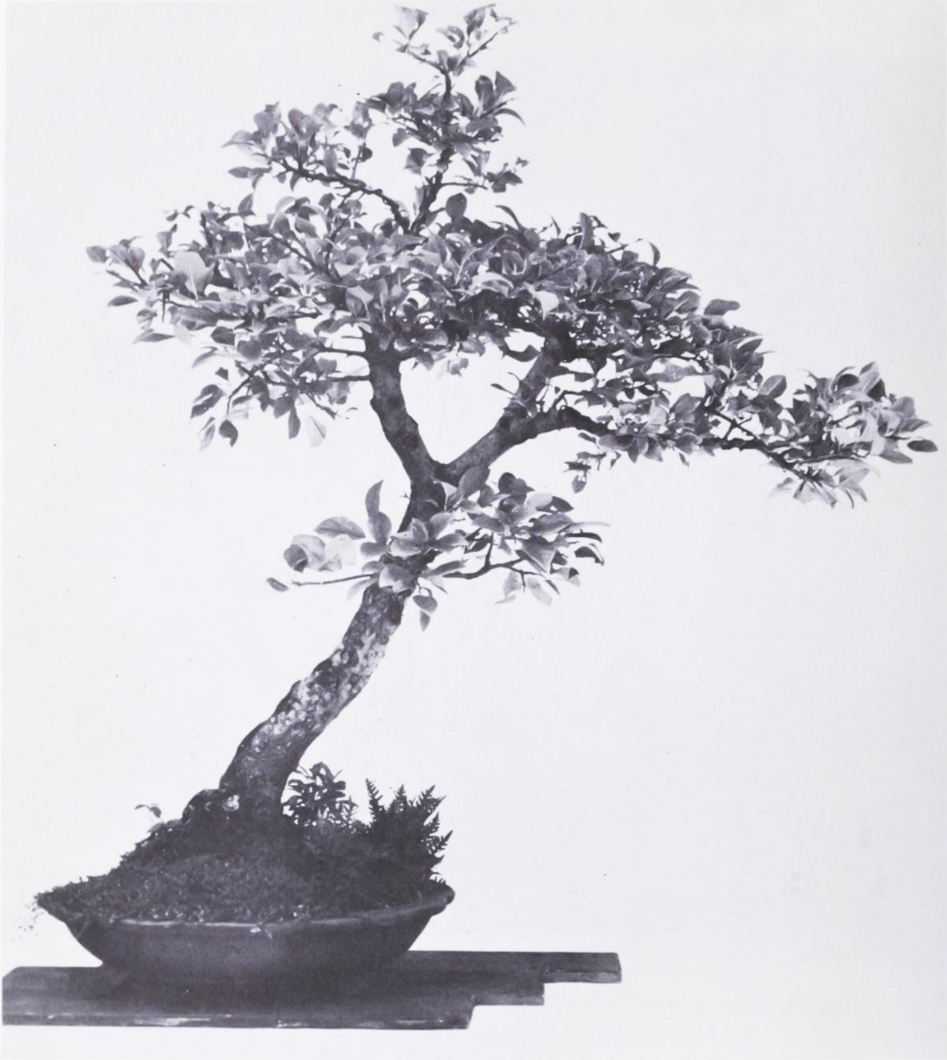


(*Above*) Natural collected apple in rectangular container without trimming and wiring.

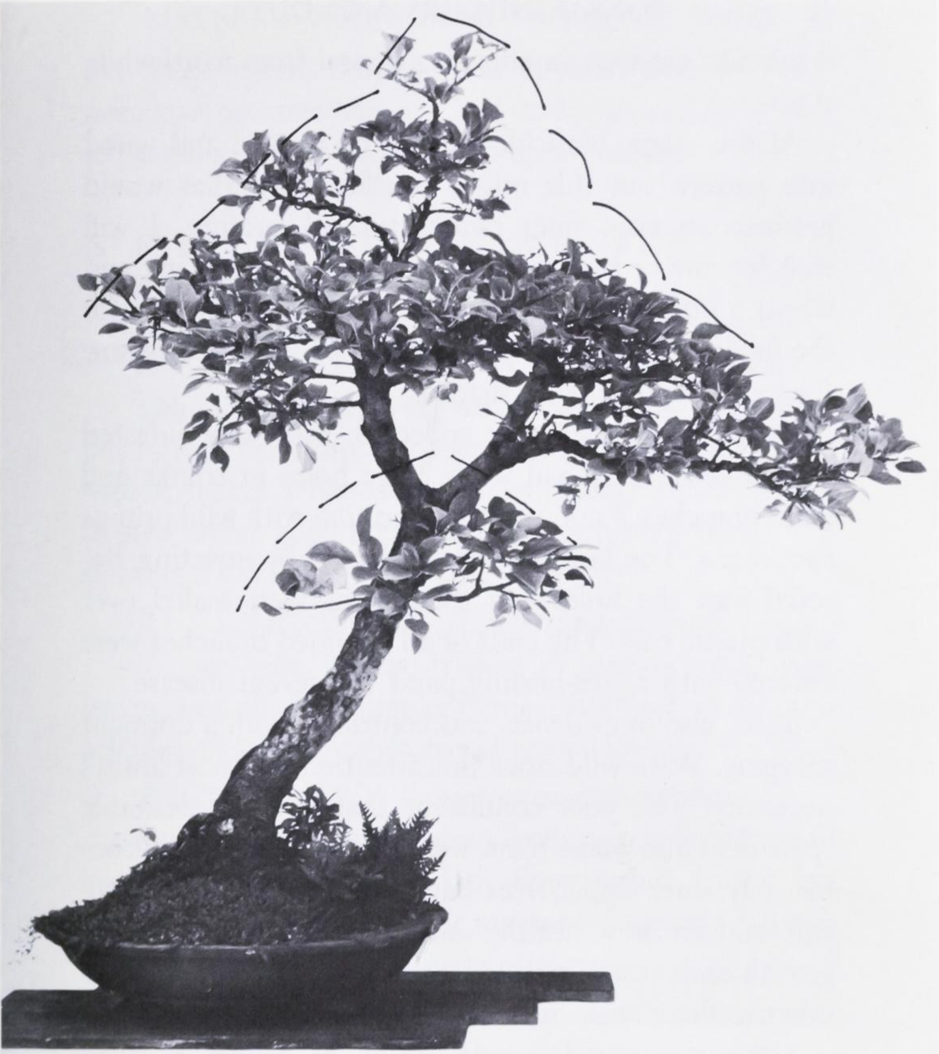
(*Above right*) Outline of finished bonsai after additional trimming and wiring.

(*Below right*) Root and trunk detail showing concave holes due to drastic pruning of unwanted branches.





Natural collected apple trained in a slanting style in an antique mirror-style Japanese container.



Outline of finished bonsai after more growth and wiring.

it takes to produce an engaging bonsai from worthwhile stock.

At this stage, branchlets could be pruned and wired into pattern but this might sacrifice buds that would produce an even finer ramification. Therefore, I will wait for one or two more growing seasons, pruning and wiring a little each year. Then it will be time enough for the final design to be set. The photo on p. 71 shows how the tree will probably be shaped.

When these trees were collected, they were infested with borers. They had made large holes in trunks and main branches, a not unusual condition with wild prunus specimens. The borers were eliminated by injecting Borerkil into the holes and these were then sealed over with plastic clay. The ends of all trimmed branches were covered with a tree-healing paint to prevent disease.

Scale, also in evidence, was controlled with a dormant oil spray. With wild stock this attention is almost always necessary. The poor conditions that produce desirable specimens also make them weak and susceptible to trouble. My three apple trees have responded to good culture and are now healthy and producing vigorous new growth each year. Collected trees, well cared for, develop into excellent bonsai in a relatively short time.

Although natural dwarfs are to be found in every part of the country, good bonsai material cannot be located on every expedition. I rarely come home empty-handed, however; I always find some ferns, grasses, wildflowers, and mosses that are not covered by conservation laws, which, of course, must be respected wherever you collect. I am always on the lookout for seedlings of native trees which, despite their attractiveness as shade trees and ornamentals, are less readily available in nurseries than trees of Asian or European origin.

FINE NATIVE PLANTS FOR BONSAI

AMERICAN BEECH (*Fagus grandifolia*)

Tall forest tree with smooth, steel-gray bark, a golden fall foliage that turns a papery brown and hangs on all winter; makes a handsome bonsai. Large leaves reduce in size under good bonsai culture. Informal upright or slanting style.

BITTERSWEET (*Celastrus scandens*)

Woody vine, can be trained in various ways; large leaves; beautiful red-orange berries that hold in autumn after leaves fall. Any style except formal upright.

BLUEBERRY (*Vaccinium angustifolium*)

Shrubs of fields and barren lands; many forms; small leaves, tiny white or pinkish flowers and fruits; frequently dwarfed; spectacular maroon-and-purple fall coloring. Any style except formal upright.

EASTERN REDCEDAR (*Juniperus virginiana*)

A common evergreen with small needles, fibrous roots and interesting shaggy bark; ideal for bonsai culture. Any style.

HEMLOCK (*Tsuga canadensis*)

Common evergreen of shaded, damp forests; small-needled; dwarf sports often occur. Any style.

HORNBEAM (*Carpinus caroliniana*)

Understory tree found in eastern hardwood forests; leaves reduce in size when plants are container grown; easily propagated; valuable for brilliant red fall coloring. Any style except cascading.

MOUNTAIN-LAUREL (*Kalmia latifolia*)

Broad-leafed evergreen shrub with pinkish-white spring flowers of extraordinary beauty; naturally graceful form; furrowed bark. (A related species, *Kalmia angustifolia*, the sheep-laurel, with reddish flowers is smaller in all aspects.) Any style except formal upright.

PITCH PINE (*Pinus rigida*)

Common pine of sandy barrens, seashores and glacial lake beds; very hardy and just as easy to train as the Japanese black pine (*Pinus thunbergi*). The pitch pine has the further advantage of sending out buds from mature bark, and needles will become shorter. Any style.

SWEET BIRCH (*Betula lenta*)

Common forest birch abounds on rocky sites and in abandoned gravel pits; produces excellent miniature bonsai; rapid grower; easily pruned; very good for quick results. Any style.

WINTERBERRY OR BLACK-ALDER (*Ilex verticillata*)

Understory tree of wet locations; deciduous and with bright red berries that appear along the twigs in autumn; very like the Japanese *Ilex serrata*, although this is smaller in every respect. Any style except formal upright.

7

What to Look For in Nursery Plants

COLLECTING plants from the wild will not tempt all bonsai enthusiasts. Some may not care to scout the fields and woods; others will not find it convenient. Perhaps collecting native plants is a hobby within a hobby. Nursery stock is available to everyone and most American bonsai are started from nursery plants. Even the ardent collector of native material usually gets half his stock from nurseries.

There is no question that nursery browsing is easier, less demanding, and more comfortable. The plants may not be so spectacular as some of the dwarfs you find in the wild, but they can still be rewarding. Each of us develops his own routine for combing the nursery rows; we learn how to judge potential material and we try not to rush our decisions. Perhaps the best place to start is the discard corner where nurserymen relegate plants unsuitable for landscape work. Frequently, these have dwarfed trunks, twisted forms, irregular branching—all valuable characteristics as bonsai stock. The nurseryman is usually glad to get rid of them at almost any price and so everyone is happy.

SEEDLINGS AND CUT-DOWN PLANTS

There are two types of material to be searched for. First are the seedlings which you can nurture, prune, train, and generally develop, over a period of many years, into attractive bonsai. If possible, put the seedlings directly into the ground where they can be worked on easily. Each year fertilize, trim, leaf prune, and root prune them. With this treatment, they will develop thicker trunks than if they grew in pots, and the trimming will produce proportionate branching and twigginess.

The other type of nursery material is already mature with large solid trunks and main branches. Height is not important since the upper parts can be radically pruned back to the desired size. We call this "cut-down stock." It can be made into charming instant bonsai if it is potted up at the beginning of spring and trained over the growing season to refine the shape and fill in the cut-away areas.

Be careful in your selection of plants to be cut down, or results may be regrettable. Usually there are many plants to choose from. The trunk line and the position of the heavy branches are the determining factors. Examine a tree carefully to make sure you can cut away unwanted parts and still have a fundamentally pleasing form. If possible, examine the root system to see if it can be used to advantage. Try to visualize the final product from its present state.

Nursery stock is balled and burlapped or else canned. The canned plants are excellent for bonsai since their fully established, fibrous root system make it possible for training to be started immediately. Furthermore, such plants are already conditioned to a reduced environment, and root as well as top pruning causes minimal shock.

JUNIPER, CRYPTOMERIA AND AZALEA

One such can-grown specimen, trained for three years, appears in Photo 5. I found it at a local nursery, part of a large shipment of prostrate junipers (*Juniperus procumbens*), a common spreading ornamental with slightly glaucous foliage. Like most junipers, it is excellent for bonsai because of its hardiness, exfoliating bark and the long life of its needles. To find it, I searched through the juniper section, tree after tree, finally selecting this for its obvious potential as a cascade. Originally other large branches jutted out from the right side of the trunk, and these removed entirely, also many smaller branches on the other side because they hid the line of the trunk and the system of cascading branches.

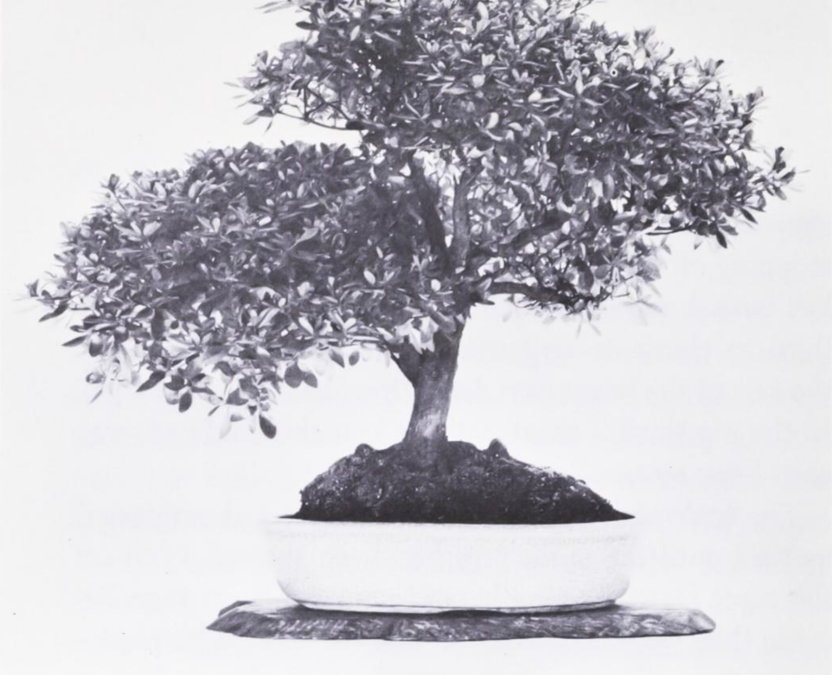
I inserted a heavy wire into the soil at the base of the trunk and wound the wire around the trunk all the way to the end of the longest branch, thus making the branch an extension of the trunk. A second wire was led out from the soil and directed to the forward branch. The manipulation of these two wires produced the initial form. Then with finer wires, I wound the secondary branches, including the three principal limbs at the back. Coaxed into position, these gave depth and width to the tree. Over subsequent growing seasons the wiring has been replaced to accommodate new growth and maintain form.

The tree is still in training. Before long, I will completely remove the major wires since the wood has almost hardened into shape. I have pinched back the needles each year, and allowed new growth to expand where there were gaps in the composition. The container is a traditionally round and deep type that supports the long line of the cascading style. With any juniper a little lime sprinkled over the soil and watered in once or twice a year helps to maintain the lovely subtle color of the needles.

The dwarf cryptomeria (*Cryptomeria japonica Bandistuga*, p. 11, was also can-reared. I found it at another sale in a local nursery. I observed the straightness and taper of the trunk and the heavy roots at the soil line; the suitability of the tree for a formal upright was obvious. Most of the dwarf cryptomerias are naturally suited to this style (as is the Alberta spruce, another genetic dwarf) . I pruned the cryptomeria at once by stripping off limbs to leave the lower third of the trunkline bare. I pruned branches growing on the next higher third to eliminate opposite branching and to establish the first of the triads that define the formal upright style. In the top third, I shortened the branches and cut away one of two terminals.

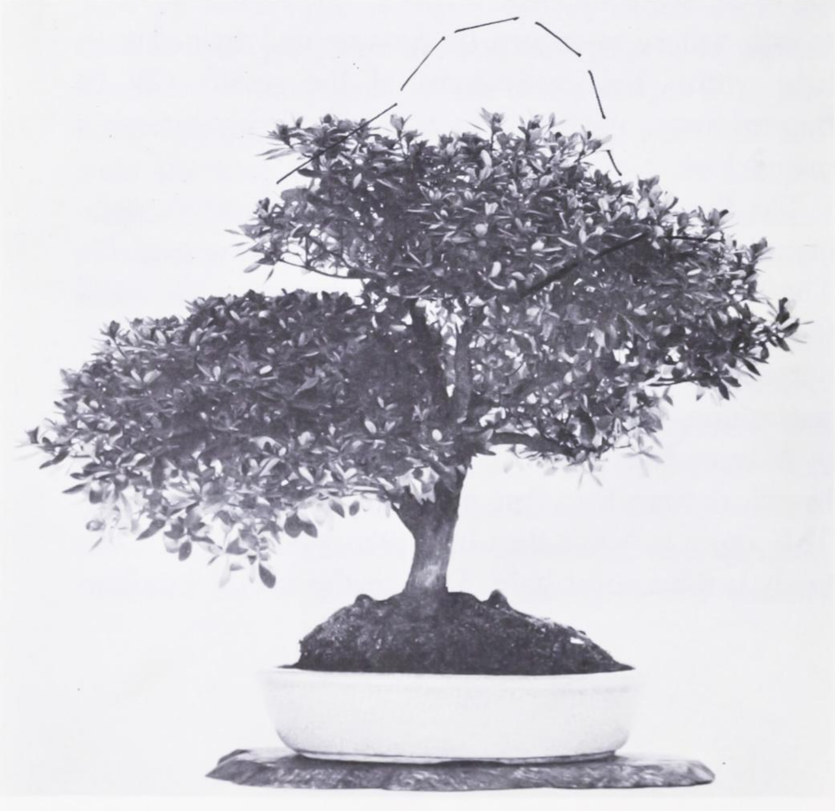
The basic wiring was started at the base and progressed upward until the entire tree had been shaped. I left on the wires for eight months and removed them then because they were beginning to scar the bark. The photograph shows the tree just after the second set of wires was removed. Two seasons of wiring have left the main branches horizontal while the branchlets have retained the upward thrust the minor wires gave them. With species like this, it takes only a short period of wiring to induce permanent shape. In future seasons, new growth will be restrained by pruning and trained with light wiring. Eventually some of the growth will be thinned away, and then the tree will quickly assume a mature look.

The Kurume azalea (*Rhododendron obtusum*) , commonly used for bonsai in Japan, is shown on page 80. The leaves are very small, but the flowers, while small for azaleas, are large in proportion to the leaves. This is not wholly desirable for bonsai but in this case no real misfortune. The dark but brilliant red blooms appear in May or June and completely cover the plant from branch to branch so that practically no leaves are seen. This azalea may not then be a proper bonsai but it certainly is a beautiful sight. Despite the size of the flow-



Bonsai developed from balled-burlaped azalea (*Rhododendron obtusum*). It has been trained in an informal upright style, is 15 inches high, and is about eighteen years old. The container has a white crackle glaze.

Dotted line indicates further growth.



ROOT DETAIL—ROOTS WILL BE GRADUALLY EXPOSED AS BONSAI DEVELOPS.

ers, the Japanese also prize it and are much given to spring displays of Kurume azaleas as bonsai.

Because thick, heavy trunks develop quickly, azaleas are particularly good bonsai material, but it is difficult to locate trees with single trunks. In this country the preference for azaleas as ornamentals has interested propagators in producing quick plants with multiple, radiating stems. My plant is now more than fifteen years old. I started training it about ten years ago when it was much smaller, although large enough and fine enough to warrant a good container. Some branches were cut from the bottom third of the trunk to create an open space. The left branch was developed by wiring too branches flat to give the look of a single branch. Over the years, leaves have filled in and completed this illusion. These last two years this bonsai has been allowed to grow without wiring and with a minimum of pruning. Next spring, as it emerges from dormancy, I will prune it considerably, rewire branches and transfer it to a larger, flatter container. The bonsai should then be in final form.

A detail of the root system is shown on page 81. The roots have been treated with care, being exposed slightly more each year, but never pulled up into the air. They have become woody with the desirable look of age.

BONSAI WITH FLOWERS

Flowering bonsai are grown for the beauty of the display when blossoms are at their peak. Many bloom in spring, a few in summer and autumn. The common ones are apricot, azalea, camellia, cherry, crepe myrtle, forsythia, gardenia, jasmine, magnolia, osmanthus, peach, pear, plum, quince, rhododendron, silk tree, tea, winter sweet, and wisteria. All are available in American nurseries. If you prefer bonsai that flower you can make a selection to have something in bloom throughout the growing season. Some plants can be enjoyed twice, first with flowers and later with fruit. For a succession of bloom, you might select apricot, forsythia, azalea, rhododendron, wisteria, crepe myrtle, and camellia or gardenia. (These last two bloom both spring and fall.)

For cool summer pictures, grow dwarf bamboo, golden willow, nandina, tamarix, and various grasses. These are frequently displayed with stones laid in basins of sand and water, and they are indeed a refreshing sight on a hot summer's day.

BONSAI FOR FALL COLOR AND FRUIT

For brilliant autumn color our native trees are, of course, superior to any others. In nurseries you can find barberry, beech, birch, Chinese elm, euonymous, gingko, hornbeam, ivy, Japanese maple, oak, trident maple, and zelkova. These are all handsome in winter after leaves have fallen and the intricate pattern of twigs becomes visible.

Bonsai that set bright fruits are also delightful, although the fruits are rarely in proportion to the trees. Cotoneasters, hawthorns, hollies, and some crab-apples will produce small fruits just as they do in nature. Apples, pomegranates, and citrus species set fruits of standard size, and these trees cannot be induced to set smaller fruits for bonsai, although we can force them to produce smaller leaves. In Japan, fruiting trees are very popular; here their charms are just beginning to be appreciated. (For this classification by display value, I am indebted to Lynn R. Perry, *Bonsai: Trees and Shrubs*.)

BONSAI FROM NURSERY PLANTS

COTONEASTER (*Cotoneaster horizontalis or apiculata*)

There are many forms with small leaves, white to pinkish red flowers, and red-orange fruit. These can be grown indoors the year round, as well as outdoors. If kept outdoors, plants will lose leaves in winter. Any style except formal upright.

CRYPTOMERIA (*Cryptomeria japonica nana*)

This dwarf has small compact needles, is easy to prune and quite hardy, and stands considerable cold. Prune needles by pinching off ends; if cut, needles turn yellow and wither. Formal or informal upright style.

JAPANESE MAPLE (*Acer palmatum*)

This is one of the most popular of the deciduous plants, comes with red and green leaves. Select a deep container for leaves have a tendency to burn if plants are set shallowly. Any style except formal upright or cascading.

JUNIPER (*Juniperus procumbens*)

Many of the small-needled junipers make good bonsai, especially the green and blue forms, and the low, compact, spreading types. Good for semi- and cascading styles.

MUGO PINE (*Pinus mugo pumila*)

This shrubby tree has small, straight compact needles. Available in most nurseries, the plant withstands considerable dryness and requires full sun. Any style.

KURUME AZALEA (*Rhododendron obtusum*)

Varieties of this small-leaved evergreen offer flowers in a wide range of colors and many sizes. Look for specimens with single heavy trunks. Growth sprouts quickly from old wood. Any style except formal upright.

8

Tender Plants for Indoor Bonsai

BONSAI enthusiasts are not always satisfied to enjoy their hardy plants outdoors in the garden or on the porch or patio; they want their decorative bonsai indoors for a longer period than the three-or four-day appearances possible for their outdoor plants. In winter they would also like to *see* their bonsai instead of burying them in a coldframe. City and apartment dwellers, for whom most hardy bonsai are often out of the question, also long for reliable indoor bonsai. Training tender material of the house-plant type answers all these desires for it is the techniques not special plants that are basic to bonsai.

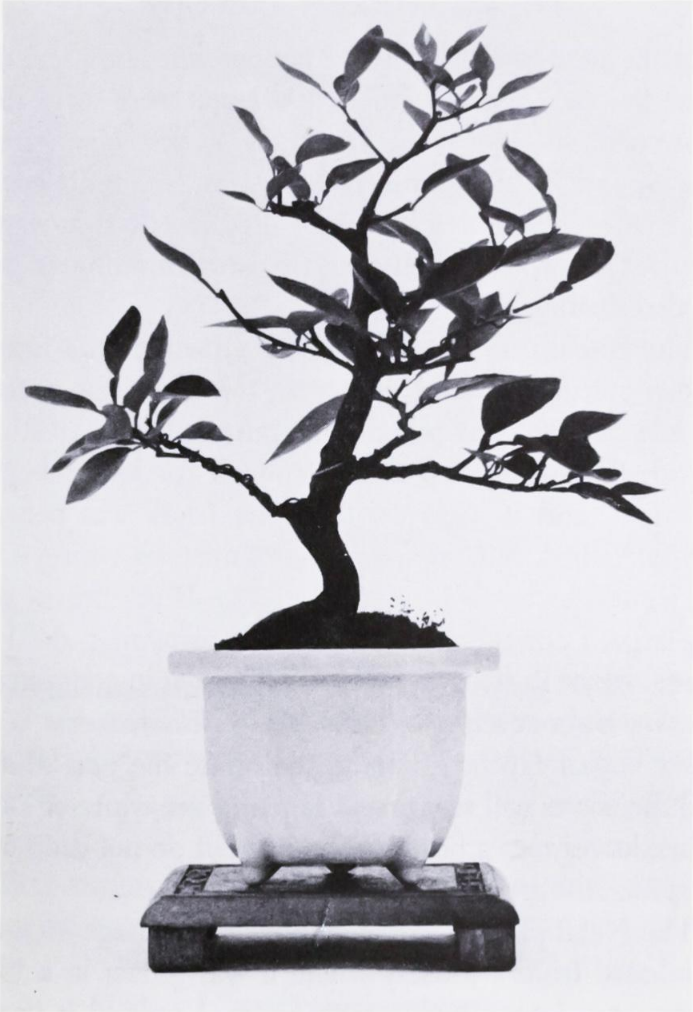
Experiments with semihardy and semitropical plants of a woody nature have resulted in most attractive bonsai, but only recently have these been attempted, and only by a few enthusiasts. My own trials with indoor bonsai have been limited, but successful, as the photographs in this chapter indicate, and I continue to work with more and more of the tender plants. So do several of my friends in our bonsai society.

GOOD PLANTS FOR INDOORS

We have found that bonsai of good quality can be developed from all of these: the dwarf pomegranate; the Chinese podocarpus; many citrus varieties, including the calamondin, kumquat, lemon, lime, orange, and tangerine; most geraniums, particularly zonal and scented types; a miniature hollylike plant, *Malpighia coccigera*; the gardenia; and the sasanqua camellia; *Serissa foetida*; the Natal plum, *Carissa grandiflora*; various English ivies; the elfin herb, *Cuphea, hypssopifolia*; and the mistletoe fig, *Ficus diversifolia.*

GRAPEFRUIT, IVY, AND NATAL PLUM

The citrus group is particularly easy. Plants are readily propagated from seeds, the seedlings grown in clay pots until plants are woody enough for shaping. The grapefruit tree shown opposite is ten years old and was grown from seed. I potted the plant in a mixture of one-third sterile commercial potting soil, one-third sharp sand,



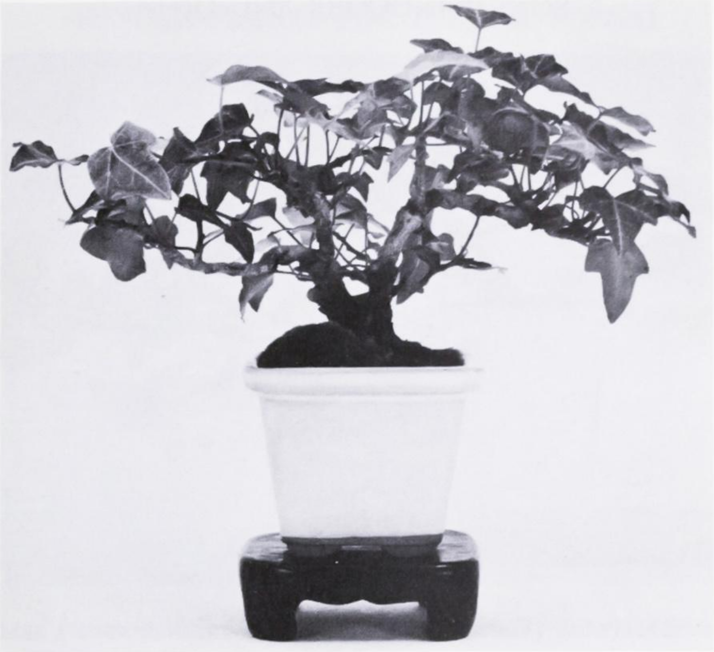
This grapefruit tree was developed from seed. It has been trained in the informal upright style for ten years.

and one-third humus. As it became woody, I trimmed top to about 10 inches to force out new low shoots on the trunk. These shoots were allowed to develop into branches. Once they were woody enough, I trained the plant by wiring with annealed copper wire, just as I do other bonsai. When branches and trunk were set, I discontinued wiring except for training the new green shoots. I find that citrus plants need trimming every two to three weeks in summer for they grow fast in warm weather. In winter, they slow up and trimming is not needed so often.

The English ivy on page 89 was grown from a heavy woody cutting. When this rooted, the plant was potted up in a standard clay pot and its training begun. Within a year, the cutting was strong enough for me to begin wiring it, and it went on until the trunk was permanently formed. Now shaping is continued by wiring new shoots and by trimming excess growth. If any leaves get too large, I cut them off to keep the plant in scale. Ivy leaves reduce in size when plants are grown in containers. This ivy is about ten years old.

Ivy bonsai can be grown in the house the year round and the leaves will stay green. If plants are wintered outdoors, leaves turn a beautiful bronze but do not drop off. In spring, the green hue returns.

The Natal plum, *Carrisa grandiflora*, on page 90, was purchased from a nursery where it was grown in a No. 10 tin can. I have had it three years. I pruned it back, shaped it with wire to the semi-cascading type, and transferred it to a tall glazed white container. Since this plant blooms and sets fruits at the tips of new shoots, trimming is not completed until fruit is well in evidence. The green branches get woody and need periodic shaping until this plum develops permanent bonsai form. An-

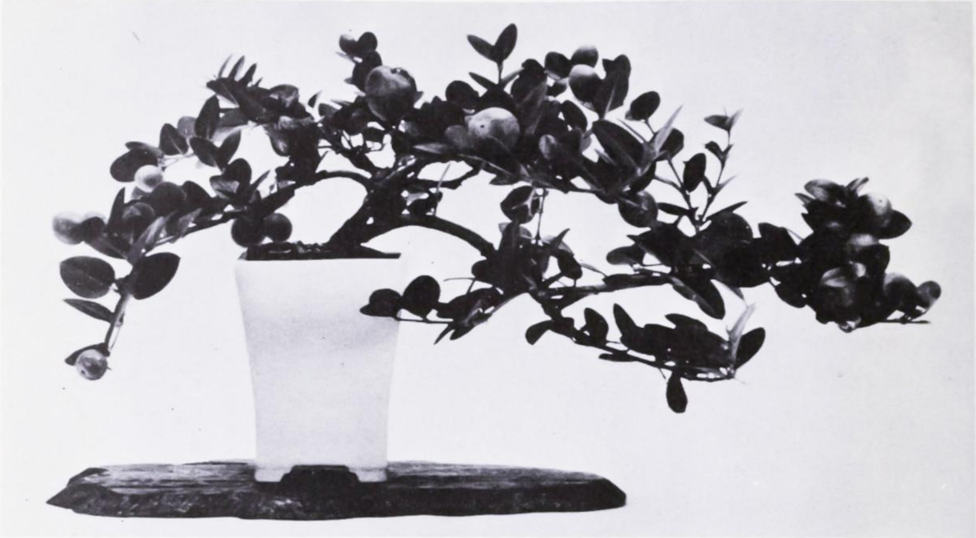


THIS INFORMAL UPRIGHT BONSAI OF COMMON IVY (*Hedera helix*) WAS DEVELOPED FROM CUTTINGS TAKEN TEN YEARS AGO. IT IS 3 INCHES HIGH AND PLANTED IN A WHITE CRACKLE GLAZED CONTAINER.

other variety, *Carrisa grandiflora nana compacta,* has smaller leaves than the plant in the photograph.

CULTURE INDOORS

Tender bonsai plants grown indoors need the same daily care required for hardy bonsai, with attention to watering, fertilizing, and protection from pests. According to species, they require full light or sunny windows. A cool but frostfree sunporch suits most of them or any room that is not often above 72 degrees F., or too dry.



A Natal plum (*Carissa grandiflora*) was trained into a semi-cascade bonsai from canned nursery stock. The tree which is 18 inches wide, flowers freely and sets edible red plums. The tall white container is glazed.

In hot unfavorable conditions, gardenias and camellias drop their buds. If the bonsai are set on trays of moist sand or gravel, they benefit from the increase in the humidity surrounding them. However, anyone successful with house plants can be successful with bonsai, which are no different except that they have been trained to distinctive forms.

In winter, I feed the indoor bonsai only once, in January or February, as I see signs of new growth. This tides them over until spring. If plants are overfertilized in winter, growth will get long and scraggly and the trees will lose their shape.

When frost danger is over later in spring, I put the tender bonsai outdoors as decoration for patio and garden. They are brought back inside again early in September before the start of cold weather.

Since there is little information to date on indoor bonsai, you too will have to experiment. Possibilities go beyond my recommendations. Other plants may suit your conditions better than these, and you will doubtless enjoy finding out. Again—bonsai can be developed from almost any woody material.

TENDER PLANTS FOR INDOOR BONSAI

Much is still to be learned about tender plants for year-round indoor bonsai. These have not been tried long enough by enough people for us to know much about their longevity when trained. I have grown the starred ones and have observed all the others. I know that opportunity is limitless here but more experimenting is needed.

CAMELLIA (*Camellia sasanqua*)

Like the gardenia, this plant requires a cool room if it is to bloom. Flowers vary in size and come in many shades from white to red. There is a dwarf form with small red flowers and leaves that are in scale. Any style except formal upright.

* CITRUS

The shiny green leaves, white blooms, and small fruit of the calamondin orange, kumquat, lime, and tangerine make these semitropicals most desirable for indoor bonsai. They are easy to grow from seed but to get true species, start from rooted cuttings. These get woody within a year and are easily trained. Any style.

ELFIN HERB (*Cuphea hyssopifolia*)

A delicate and fast-growing plant, this eventually develops woody growth suitable for training. It must be pruned often to keep its shape. The small leaves and fragile purple flowers are most attractive. Any style except formal upright.

* GERANIUM (*Pelargonium*)

All geraniums eventually develop woody growth. In addition to bonsai forms, plants can be trained for tray landscapes or used with grass plantings. There is a wide variety of shapes and colors of flowers and foliage. The zonals and scenteds are particularly adaptable. Dwarf varieties make delightful mame bonsai. Shaping is usually done by pruning, since growth is usually too brittle for traditional wiring. Any style except formal upright.

* GARDENIA (*Gardenia jasminoides*)

Glossy green leaves and fragrant white flowers make this a charming bonsai. The miniature form, G. *jasminoides radicans* is particularly desirable. Woody stems develop in a short time and fruit may be set, but I have never observed it. A cool room is required if this is to flower indoors. Any style.

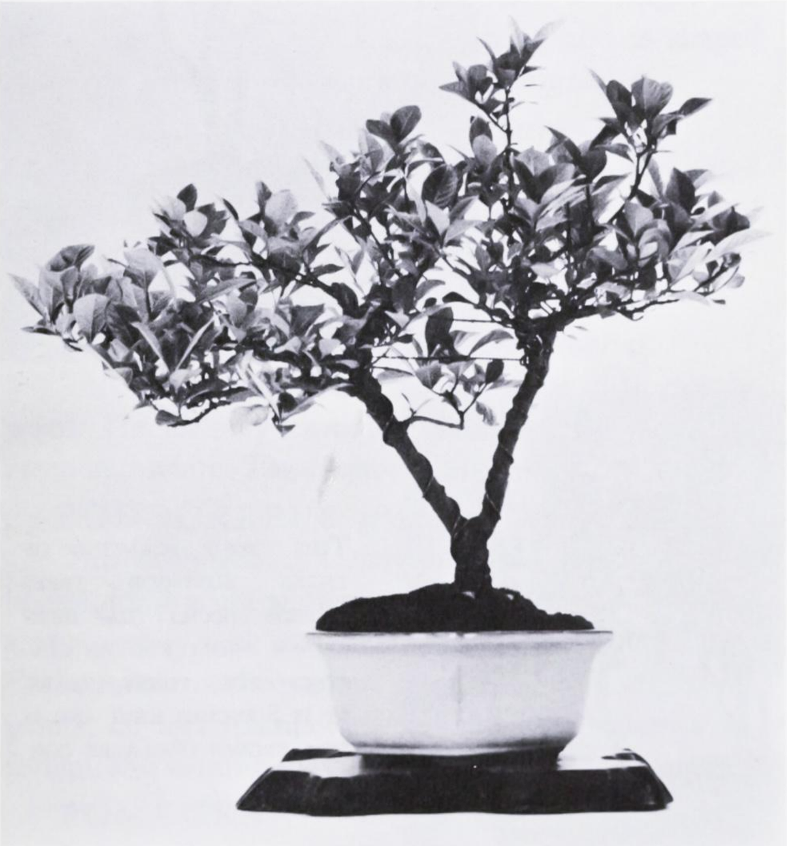
* IVY (*Hedera helix*)

Many varieties of this woody vine make excellent indoor bonsai. They come in varying shades of green and with different leaf shapes. Plants can be trained by wiring. Any style except formal upright.

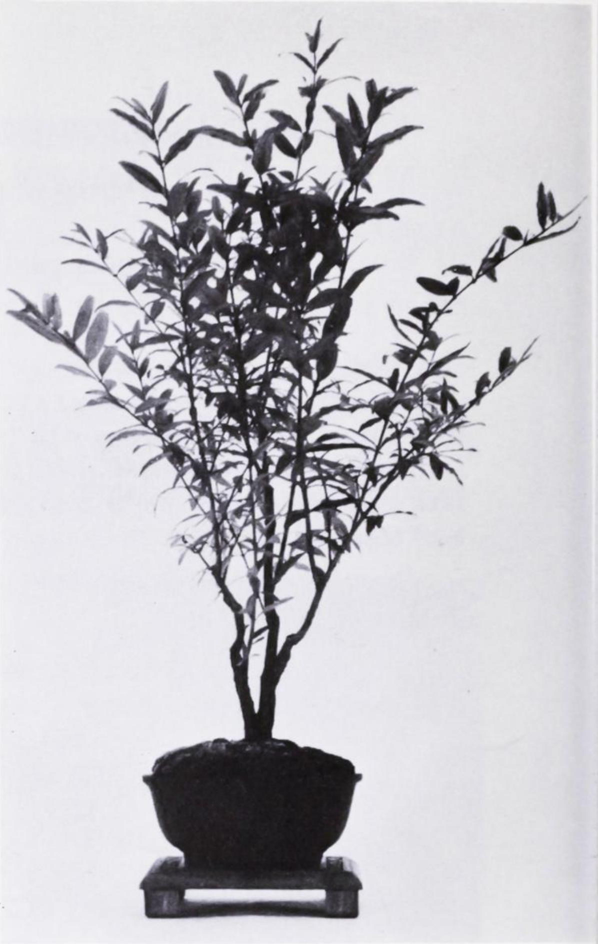
MINIATURE-HOLLY (*Malpighia coccigera*)

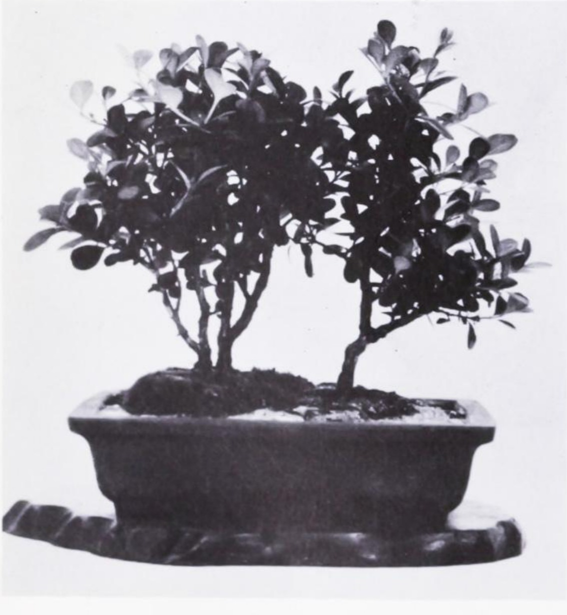
Small green waxen leaves, pink flowers, and red berries in scale make this tender plant excellent for indoor

Gardenia jasminoides GROWN FROM A CUTTING FOR FIFTEEN YEARS MAKES THIS INFORMAL UPRIGHT WITH TWIN TRUNKS. ONE TRUNK NEEDS FURTHER DEVELOPMENT SINCE THEY ARE TOO EVEN. THE TREE IS 15 INCHES HIGH AND IS PLANTED IN A SIX-SIDED, POWDER-BLUE GLAZED CONTAINER.



POMEGRANATE (*Punica granatum*) IS TRAINED AS AN INFORMAL UPRIGHT BONSAI WITH TWIN TRUNKS. IT WAS GROWN FROM SEED, IS TEN YEARS OLD AND 14 INCHES HIGH. THE UNGLAZED CONTAINER IS DARK BROWN.





THIS GROUP PLANTING OF THREE BOXWOOD TREES (*Buxus* species) HAS BEEN GROWN FROM ROOTED CUTTINGS FOR THREE YEARS. IT IS 5 INCHES HIGH AND IS IN A BROWN UNGLAZED CONTAINER.

bonsai of standard or miniature size. Any style except formal upright.

MISTLETOE FIG (*Ficus diversifolia*)

Small green ovoid leaves and small fruits make this attractive for bonsai. Stems are shaped by wiring. Any style.

* NATAL PLUM (*Carissa grandiflora*)

There are two forms, the tall standard and dwarf compact, which produce fruits and flowers. The white flowers are fragrant and the edible fruits are bright red. As a bonsai this needs limited wiring and is shaped mainly by pruning. Slanting and cascading styles.

* OLEANDER (*Nerium oleander*)

These woody shrubs with gray-green or variegated leaves bear small flowers in shades of white, pink, and red. Plants grow readily from cuttings and, after several years, leaves reduce in size. Any upright style.

PITTOSPORUM (*Pittosporum tobira*)

This tropical develops woody stems that can be wired. The leathery leaves are plain green or variegated green and white. The creamy-white flowers are scented.

PODOCARPUS (*Podocarpus chinensis*)

This evergreen can only be grown as an indoor bonsai, for it is not winter-hardy in the Northeast. It has a very woody bark and slender green spiralling leaves. Fruits follow inconspicuous greenish flowers on female plants; on male plants, flowers are yellow. Formal, informal, and slanting styles.

POMEGRANATE (*Punica granatum nana*)

Indoors this dwarf semitropical stays evergreen. It bears small leaves, flowers, and fruit. The flowers are a fine red-orange. The plant is easy to grow from cuttings and can also be treated as a hardy bonsai. If grown outdoors, it will go dormant and need the protection in a cold frame. Informal and slanting styles.

SERISSA (*Serissa foetida*)

This is one of the best tropical plants for indoor bonsai. The stems are woody, leaves and flowers small and in scale with the trunk. There are two forms; one is all green and the other variegated with yellow margins. The white flowers are single or double. This needs constant pruning to keep it in shape. Any style.

9

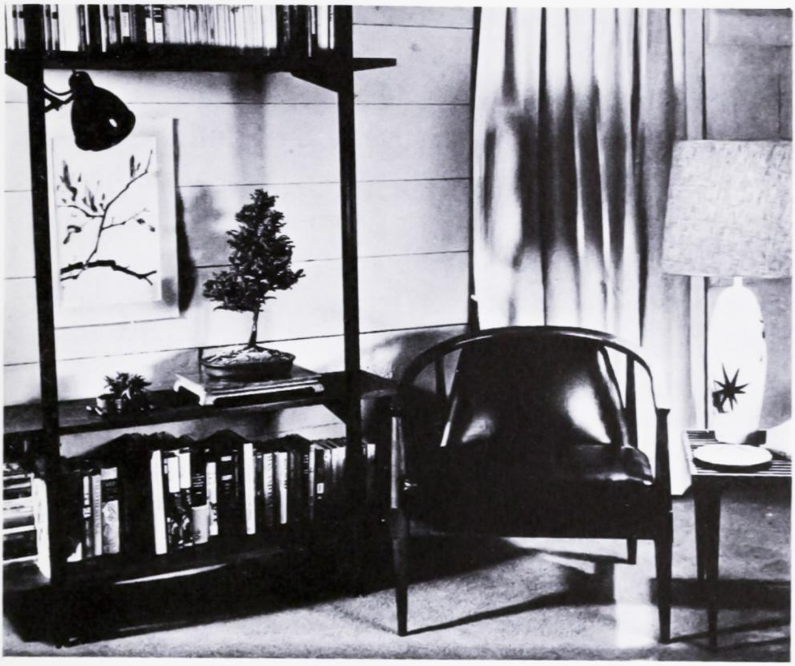
Displaying Bonsai in the House and in the Garden

BUILT into the living room of the traditional Japanese home is the *tokonoma,* a low, wide recessed area where art objects are displayed against a plain background of soft, subtle color, all to be viewed at eye level from low cushions on the floor. Frequently included in the tokonoma are flower arrangements or a small planting of grass or herbs, lacquer or bronze boxes, a handsome stone, books in decorative bindings, and also bonsai. The bonsai is not on permanent display but brought out on special occasions. Usually the tokonoma holds three objects and, when one of them is a bonsai, it is given the most prominent position. The effect is always formal. A scroll may be hung to one side at the back but never directly behind the tree; accent pieces are chosen for suitability—all is cool and delicate, or bold and rugged.

The bonsai and any accessory pieces are placed on separate bases or stands, which are often of wood, frequently cross-cut slabs stained to emphasize the pattern of the grain. Or perhaps a small lacquered table with gracefully curved legs is used—or a polished stand, fashioned from tree roots.

There are degrees of ornateness. Bases are always selected to match the mood of the bonsai. The base for a formal upright tree is also formal and extends a little beyond the feet of the container to give a solid, settled appearance. A dark-finished base increases the feeling of stability. Informal trees are displayed on simple bases of lighter aspect. If the bonsai is semi-cascading or cascading, it is placed on a tall stand to suggest a tree growing on a steep hill with branches hanging down the side. There are no rules; each display reflects your own decorative taste. But again, emphasis is always on the bonsai; other objects must not detract from its importance.

American homes, so different from the traditional Japanese, present problems in displaying bonsai. In our living rooms, it is difficult to find at eye level space with a clear background. I use room dividers or sectional bookshelf structures where the distance between shelves can be varied. These nicely accommodate bonsai of small



A BONSAI DISPLAYED IN MY HOME ON A SECTIONAL BOOKCASE. THE SHELVES ARE ADJUSTED TO ACCOMMODATE MEDIUM TO SMALL BONSAI. THE BACKGROUND IS GREY, THE SHELVES ARE NATURAL WALNUT. AN ORIGINAL WATER COLOR IS USED AS A SCROLL, AND A SMALL ORNAMENT OR GRASS PLANTING IS USED TO COMPLETE THE COMPOSITION OF THREE WHICH IS TRADITIONAL IN THE JAPANESE TOKONOMA.

to medium size. A gray, off-white, gray-green, or even beige background will complement most bonsai. Coffee tables permit trees to be displayed in the round, but since there is then no particular background, a bonsai is too often lost to view among household objects. The Japanese would probably frown on such a place of display, but our American sense of decoration is not violated so long as the character of a tree remains intact.

ACCENT PLANTS

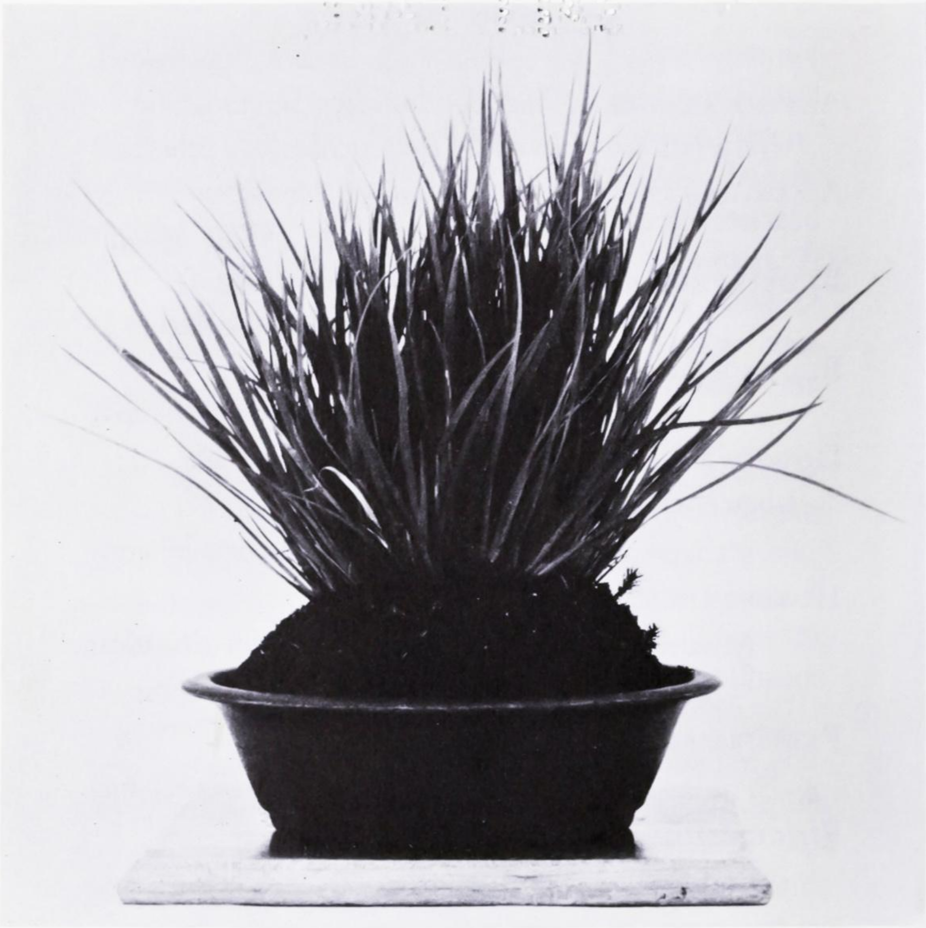
Other plants may accompany the bonsai—minute shrubs, herbs, grasses or wildflowers. Miniature bonsai can be accents for a larger tree or for paintings, decorative boxes, and stones. But, as in the Japanese homes, companion pieces must always complement the tree and not dominate it. It is the bonsai that is important. It should project a mood or feeling, suggest a scene of nature reproduced in miniature. If the display communicates this, then you have accomplished your purpose.

In summer, trees are selected for their cool, serene appearance. Willows are appropriate for the main display with a small stone or rock planting in a separate container of sand and water as a companion piece. If a scroll is hung, it might be a scene of birds in flight against the sky. Keep the composition simple; create an illusion by understatement.

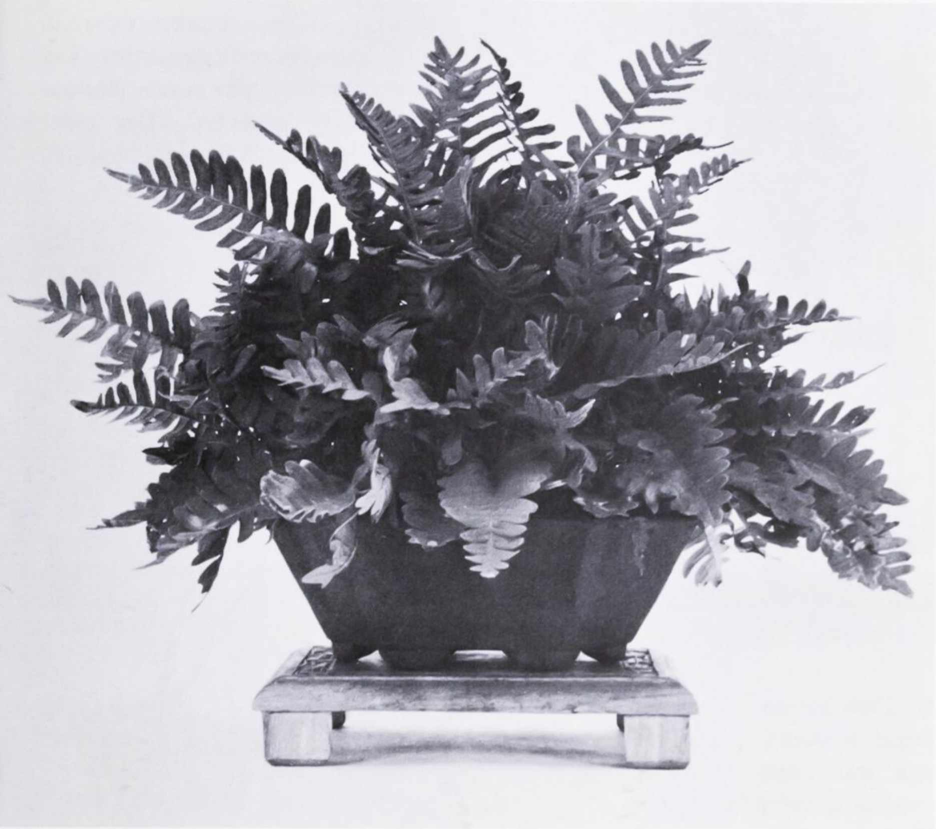
Accent plants are usually grown in small, shallow containers so that they can be displayed subordinate to the larger bonsai. Over the years I have experimented with various native materials grown in low bowls. Plants have been collected with due regard for conservation practices or purchased from nurseries specializing in wild and alpine plants.

ACCENT PLANTS

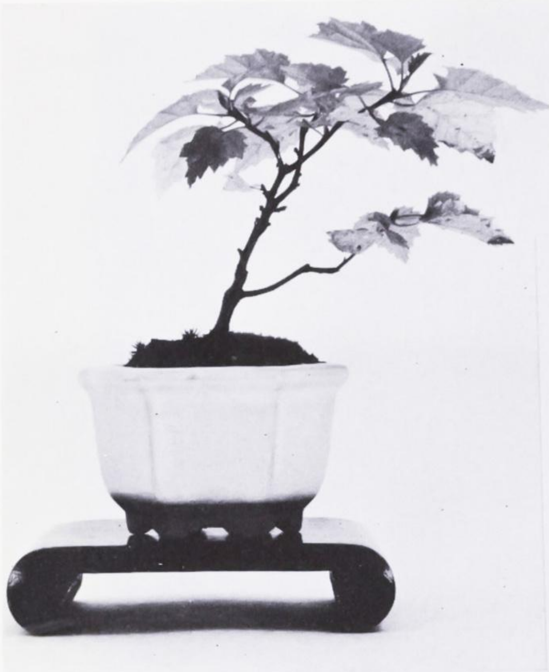
Alpine azalea (*Rhododendron lapponicum*)
Alpine buttercup (*Ranunculus eschscholtzii*)
American columbine (*Aquilegia canadensis*)
Birds-foot violet (*Viola pedata*)
Blue-eyed-grass (*Sisyrinchium mucronatum*)
Bluets (*Houstonia caerulea*)
Blue violet (*Viola papilionacea*)
Bunch-berry (*Cornus canadensis*)
Downy rattlesnake plantain (*Goodyera pubescens*)
Gold-star-grass (*Hypoxis hirsuta*)
Horsetail (*Equisetum spp.*)
Mountain cranberry (*Vaccinium vitis-idaea* var. *minus*)
Pasture rose (*Rosa carolina*)
Partridge-berry (*Mitchella repens*)
Pincushion-plant (*Diapensia lapponica*)
Shrubby cinquefoil (*Potentilla fruticosa*)
Small ferns
Spleenworts
Trailing arbutus (*Epigaea repens*)
Saxifrage (*Saxifraga virginiensis*)
Whitewoodland aster (*Aster divaricatus*)
Wild strawberry (*Fragaria virginiana*)
Wintergreen (*Gaultheria procumbens*)
Yellow violets (*Viola rotundifolia*)



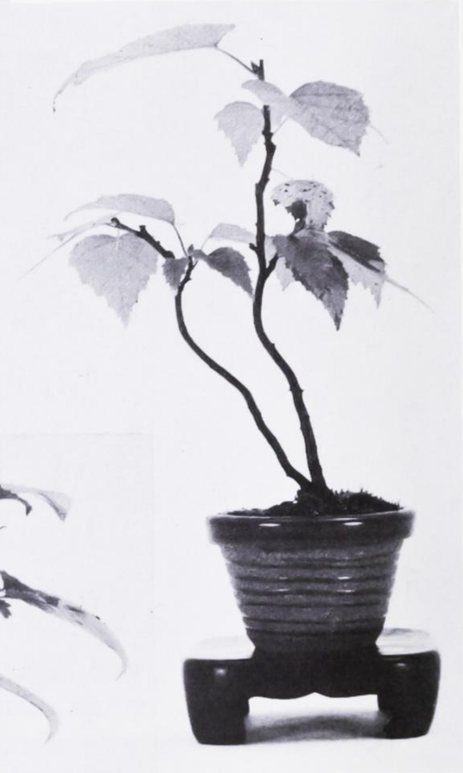
A dark brown unglazed container of blue-eyed-grass (*Sisyrinchium* species) is used for accent with larger bonsai. The grass is three years old, 8 inches tall, and has small blue star-like flowers at the ends of the leaves.



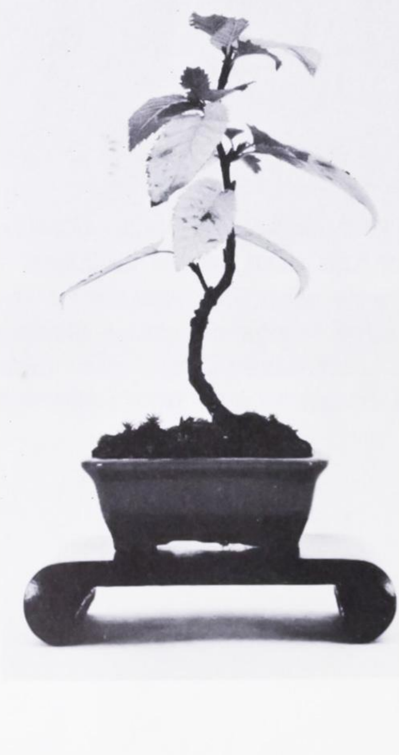
THIS POLYPODY FERN (*Polypodium vulgare*) IS 8 INCHES HIGH. IT HAS BEEN GROWING IN THIS DARK BROWN UNGLAZED CONTAINER FOR FIVE YEARS.



(*Below*) THIS THREE-YEAR-OLD, TWIN-TRUNK STYLE MINIATURE WAS GROWN FROM A GREY BIRCH (*Betula populifolia*) SEEDLING. THE DARK BROWN CONTAINER HAS BLACK RINGS.



(*Above*) THIS MINIATURE BONSAI IN SLANTING STYLE HAS BEEN GROWN FROM A GREY BIRCH (*Betula populifolia*) SEEDLING FOR THREE YEARS. IT IS PLANTED IN A GLAZED WHITE SIX-SIDED CONTAINER.



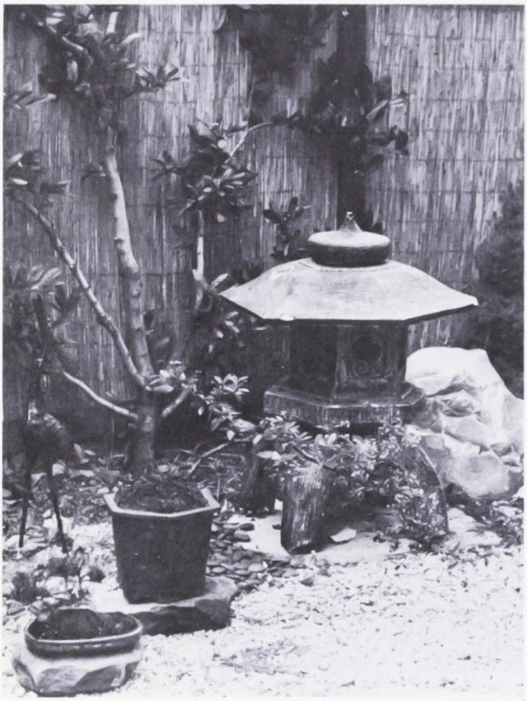
(*Opposite*) A BLACK BIRCH (*Betula lenta*) SEEDLING WAS USED FOR THIS MINIATURE IN THE INFORMAL UPRIGHT STYLE. IT IS THREE YEARS OLD AND IS PLANTED IN A BLUE GLAZED CONTAINER.

THIS COMMON RUSH (*Juncus* species) IS THREE YEARS OLD AND 12 INCHES HIGH. IT IS GROWING IN A LOW BLUE GLAZED CONTAINER.

These small plantings need careful watering in hot weather when they dry out quickly. In summer, I keep them on trays of moist sand in places partially shaded in the afternoon. Because of the small amount of soil in each container, the rapid growers must be repotted every year if they are to remain in peak condition. The best time to repot is just after plants have bloomed or early in spring.

DISPLAYING BONSAI IN THE GARDEN

In summer, bonsai can be displayed in various ways in the garden or on the patio. Since they are forms of



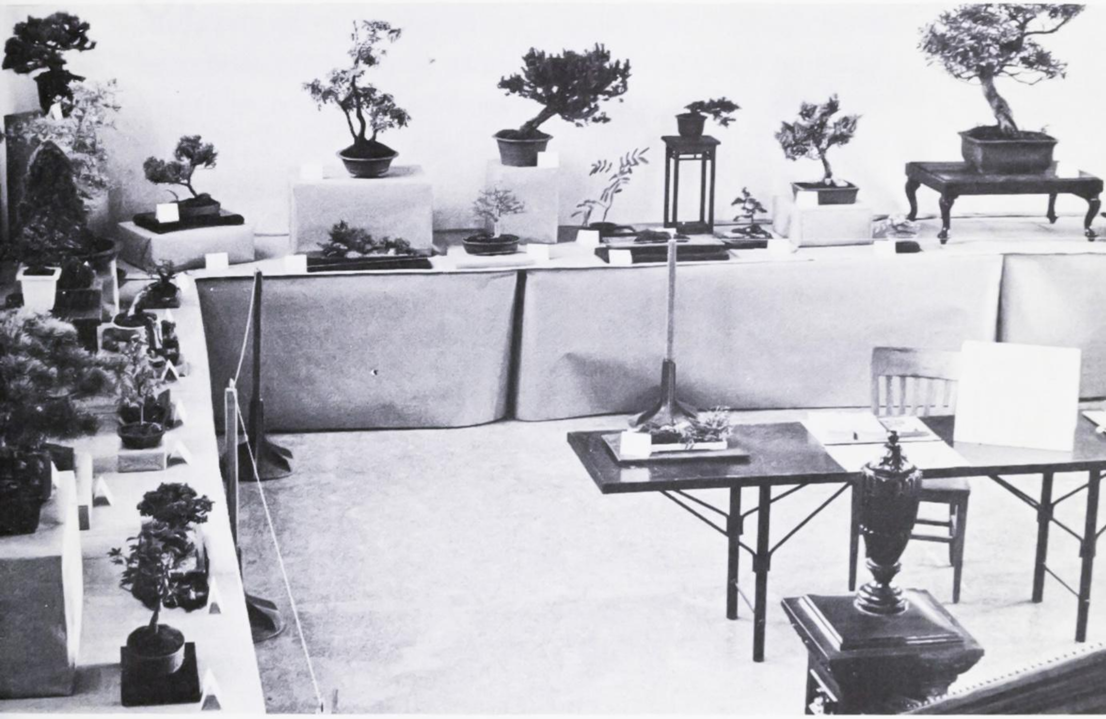
Bonsai can be displayed in the garden as ornaments or pieces of sculpture.

Courtesy Mr. Ben Cole, Whisconier Gardens, Brookfield Center, Conn.

living sculpture, they can be used the same way as other pieces of garden sculpture. And they are most decorative when attractively placed in a setting and not simply massed on tables to facilitate their care.

I think of one home with a living-room picture window. This looks out on a white stone and gravel garden. Silhouetted against the whiteness is a collection of fifteen or so small to medium-sized bonsai pleasantly grouped on a table of window height.

In another setting, individual bonsai are placed in the garden like pieces of sculpture on tree stumps and stones. The beauty of each one is clearly seen, yet all



BONSAI DISPLAY

Bonsai displayed at the first bonsai show by The Bonsai Society of Greater New York, October 1963, held at the New York Botanical Gardens.

blend into the harmonious garden composition. Such an arrangement depends upon site and also upon suitable stands to support and display the plants.

10

Exhibiting and Judging

PUBLIC exhibits of bonsai are always well attended. In the past in this country, these have been held mainly in botanical museums but, with the rapid formation of societies devoted to bonsai, there has been a considerable increase in the number of public shows. Each of thirty or more national groups now gives at least one annual show, and they also support amateur exhibits in the large commercial flower shows in New York, Boston, Philadelphia, and elsewhere. Local garden clubs have become interested and their smaller shows frequently include one or more classes for bonsai, even though there have been problems in exhibiting such unusual material. Plants in competition require judging, and it has been difficult to set up standards. Furthermore, the usual means of display hardly suffice for bonsai.

In Japan, public exhibitions are held in all seasons and each show has a different set of fixtures. In general, bonsai are exhibited on long tables with dividers. Sometimes these are fairly elaborate so that each entry is seen in its own alcove; sometimes the dividers are simply pieces of board a few inches high and colored to match backgrounds. Each entry is usually given 4 to 6 feet of space on tables about 4 feet high.

Also on display are the accompaniments of bonsai: bases, stands, scrolls, stones, boxes, accessory plantings —all the various objects of the Japanese tokonoma. Tables, walls, and dividers are of a light, neutral color to compliment the various types of trees exhibited.

Japanese shows are frequently sponsored by commercial bonsai associations, and the display equipment is permanent. In this country, we rarely have such desirable setups. The space for bonsai in flower shows is almost always limited and inadequate for display. It is, however, usually possible to have a blank wall for background and to cover it with some light fabric, monk's cloth, burlap, or seamless paper. On the standard, waist-high display tables, bonsai are placed on boxes to elevate them to a more appropriate level. Small and miniature bonsai are best displayed on raised stands to bring them even higher.

It is always important to have bonsai exhibited as close to eye level as possible. The front of tables and boxes can be covered with the same material as that used for background. Plain tatami matting is a good covering for table tops. There is seldom room for each entry to be displayed between dividers, but certainly a base or stand is essential for each tree. If there are wide display benches, larger trees can be shown in front, and smaller ones, elevated on boxes, set behind them. This arrangement is a good space-saver.

PROBLEMS OF JUDGING

As for judging, there are no traditional Japanese sources to consult; the Japanese do not ordinarily judge their shows. Their bonsai are exhibited and appreciated for their beauty; they are not in competition. Each owner displays his tree as if it were a painting in a gallery.

In this country, most bonsai societies follow this practice in their own shows, concentrating only on the display. Lack of competition seems to stimulate interest; at least it does not reduce it, perhaps because a bonsai partakes of art as well as horticulture. Standards for horticulture can be completely objective, but this is not so for art. The Bonsai Society of greater New York has found that its non-competitive shows consistently receive more than twice the number of entries of its competitive classes at the International Flower Show in New York, despite the popularity of this annual exhibit at the New York Coliseum.

Exhibits avoid the ever increasing difficulty of competitions in which we must answer the question: Is it fair to allow a purchased tree, designed and created by a professional artist, to compete against a tree developed by an amateur? If the answer is no, how can we include the professional examples of bonsai in amateur exhibits? Certainly the beauty and teaching value of bonsai created by a master are important. In Japan more likely than not a famous tree has one creator and another owner, but since the shows there are art exhibits and not horticultural contests, there is no problem. Perhaps the difficulty can be overcome by requiring professional bonsai to be *exhibited* only and not in competition. We then need to establish definite criteria for what is professional and what is amateur. I suggest that if a bonsai is imported or domestic, and *not trained by the exhibitor*, it should be placed in a special non-competitive class or exhibit.

JUDGING THE STYLE

Plants in competition are judged first as to basic style:

Formal upright with a straight trunk, top erect.

Informal upright with the trunk slightly curved, top bent toward the front.

Slanting style with the trunk slanted or curved either left or right, the lowest branch spread in the opposite direction from the main trunk, top bent slightly forward.

Semi-cascading with the trunk growing straight up from the soil and then turned sharply downward, the tip of the main trunk reaching below the *rim* of the container.

Cascading with the trunk as in the semi-cascading style, but the tip of the trunk reaching below the feet of the container.

In considering the style of bonsai, the judge must be aware of the many variations and substyles based in some degree on the five basic styles. In *Miniature Trees and Landscapes*, Yoshimura and Halford list four groups of styles. Group I contains sixteen styles for single-trunk trees classified according to the shape of the trunk; Group II, five styles featuring multiple trunks from a single root; Group III, eight styles of group plantings, each with two or more separate trees; Group IV, three styles of group plantings but not bonsai in the strict sense.

JUDGING THE FRONT

The second consideration for the judge is whether the bonsai is displayed with front turned toward the viewer. If so, in the case of upright and slanting trees, the lower branches will form the distinct triad pattern—two branches trained forward (one slightly higher on the better side), the third between or above the two and extending toward the back of the tree to give depth to the overall composition. If a bonsai is displayed backwards, the branches seen are well developed and hide the line of the trunk, which should be the center of interest. The branch arrangement should be complimentary to the trunk.

ARTISTIC MERIT

Next, the judge considers the general artistic effect, specifically:

Suitability of the style to the natural form of a species.

Design of the lower trunk and surface roots.

Relative proportions of branches, twigs, flowers, fruits, leaves or needles to the trunk and to each other.

Harmony of surface underplanting with style and composition.

Relation of container to the shape and color of a tree.

Display effect of the base on the composition.

Technique of pruning and wiring, noting especially any wire marks on trunks and branches.

If a point system is used in judging, style, front, and general artistic effect count for at least fifty per cent. Quality of horticulture is finally examined and this counts for the other fifty points. To be considered are:

General health.

Condition and color of leaves or needles, branches, flowers and fruit.

Health of the underplanting.

These then are the main elements in judging bonsai. Techniques in the development of bonsai are more complicated than in the culture of other plants, and so judging is more difficult. Culture is also more difficult. Study, especially under an accomplished master, and reading helps, but these alone will not lead to competence. This comes with constant practice and, more importantly, with close observation of bonsai acknowledged to be masterpieces of their models—the *natural* forms of trees.

11

Bonsai Questions Answered

AT flower shows, visitors always admire bonsai and they ask many questions about the miniature trees, usually the same ones over and over again. These are some of the most common queries.

WHAT IS A BONSAI?

> A bonsai is a living work of art, shaped from woody or semiwoody plant material, hardy or tender, and grown in a container or on a stone.

Plants range in height from a few inches to about 6 feet.

WHAT DOES THE WORD "BONSAI" MEAN?

Bonsai is derived from two Chinese symbols, *bon* meaning a *tray* or *pot*, and *sai* meaning *to plant*. The Japanese word is pronounced something like *bone-sye*, the syllables accented equally. In writing, the *b* is not capitalized. The plural form is the same as the singular.

WHAT IS THE DIFFERENCE BETWEEN A MING TREE AND A BONSAI?

A bonsai is a living plant while a ming tree is an artificial reproduction of a bonsai and made of wood, wire, and bits of glass that represent leaves, flowers, or fruits.

HOW DOES A BONSAI DIFFER FROM AN ORDINARY POTTED PLANT?

A true bonsai is always a somewhat woody plant. Its growth is trained and controlled so as to produce a miniature tree. Most important, a bonsai is an aesthetic use of horticultural material, an abstraction of nature on a reduced scale. Thus the natural pine may reach 50 feet, the bonsai pine only one.

ARE BONSAI EASY TO GROW?

Bonsai are not difficult, but they do require regular care to maintain form and health. Since they live out their lives in a confined space, they have rather special needs. Unless these are met, the trees will not live very long.

WHAT IS THE AGE OF A BONSAI?

It is impossible to say. The usual starting date is when a tree is first put into a container, but in the case of a 75- to 100-year-old collected natural dwarf, indeed, how old is the bonsai? Actually age is unimportant. Each tree like any other art form stands on its own merits despite age.

ARE ALL BONSAI OLD?

Bonsai can be any age. Years are not a factor that relate to quality in a bonsai. The older the material selected the more aged the tree will look, but there are various techniques for the development of bonsai that give a younger tree an older appearance.

DO YOU HAVE TO WAIT FIFTY YEARS TO HAVE A BONSAI?

No, with well-chosen stock, drastic pruning, and shaping with annealed copper wire, a creditable bonsai can be developed even in a few hours. Refinement of the tree takes a few years, but the time depends on the growth of the plant and the skill of the owner.

HOW CAN BONSAI BE KEPT SO SMALL?

Bonsai are kept miniature in various ways, mostly by the pruning of new growth, root pruning, and limitation of growing space.

ARE BONSAI KEPT SMALL BY WITHHOLDING WATER?

Withholding water generally leads to death.

Because of the small amount of soil in a container, a bonsai dries out quickly and requires repeated watering.

WHY ARE BONSAI WIRED?

Only for shaping. Wire does not dwarf a tree in any way but it may cause dieback if the second wiring is put on too quickly, or if the bark is too sharply bent. In fact, a healthy tree will begin to grow around wires, thus causing unsightly scars on the bark. You can see this happening in old fence rows where wires are sometimes imbedded 2 feet or more in the trunks of trees.

CAN BONSAI BE KEPT INDOORS?

On the whole, plants trained as bonsai are hardy outdoor types. They can be kept indoors only briefly; they may be brought in for a few days of display and then returned to the outside. There are, however, tender species, many familiar as house plants, which can be grown indoors all the time. These are mostly tropical or semi-hardy plants needing warmth in the cold seasons.

WHAT ARE SOME VARIETIES WHICH CAN BE KEPT INDOORS?

Among the more adaptable plants for indoor bonsai are pomegranate, citrus types, podocarpus, and malpighia. Many woody or semiwoody flowering varieties also take well to indoor culture. Some of these are dwarf fuschia, geranium, dwarf rose, gardenia, camellia, serissa, kumquat, and Natal plum.

IS IT POSSIBLE TO GROW HARDY BONSAI WITHOUT WINTERING THEM IN A COLD FRAME?

Yes, but it is more trouble. Before a hard freeze, insert containers up to the rim, in garden beds. Mulch with pine bark or pine needles or oak leaves up to the lowest branch. If rabbits or mice are a problem in your area, place a cylinder of fine mesh wiring around each plant.

WHERE CAN I BUY BONSAI?

You can purchase bonsai from special bonsai nurseries in this country and also in Japan. But be wary of advertisements. Some establishments sell untrained, and frequently unhealthy nursery stock stuck in pots under the name of bonsai. Others sell "bonsai seeds," which is ridiculous, since seed size has nothing whatsoever to do with ultimate tree size. If you are inexperienced, deal only with reputable suppliers and nurserymen, and realize that bonsai are relatively expensive because of the effort and time that has gone into their development. Importing trees from Japan is hazardous, and not to be attempted without thorough investigation.

Where to Buy Plants and Supplies for Bonsai

A

ALEXANDER, J. HERBERT, RFD 4, Box 299, Middleboro, Mass.
Alpines, descriptive price list—10¢

ALLGROVE, ARTHUR EAMES, North Willmington, Mass.
Terrarium and woodland plants and supplies
Natural collected material for bonsai—catalogue—25¢

ALPENGLOW GARDENS, 13328 King George Highway, North Surrey, B.C. Canada
Rare dwarf slow growing conifers and flowering shrubs —catalogue

ARMSTRONG NURSERIES, PO Box 473, Ontario, Calif. 91764
Roses and dwarf citrus, apples, peach and pears

ANDREWS NURSERY, Faribault, Minn.
Nursery Stock

B

BAMBOO MAN, THE—Box 331, Saddle River, N.J.
Containers, nursery stock

BART'S NURSERY, 525 Fifth Street, Fullerton, Penn.
Nursery Stock for bonsai—price list—10¢

BETTI BROS. NURSERY, 1132 South Green Road, South Euclid 21, Ohio
Evergreens and azaleas

BLUE WATER GARDENS, M21 at Johnson Road, Saranac, Michigan
Bonsai containers and nursery stock—catalogue—10¢

BONSAI BY KAY, Mr. Kay Kengo Omi, 2566 California Street, San Francisco 15, Calif.
Bonsai

BRECK'S OF BOSTON, 250 Breck Bldg., Boston 10, Mass.
Seeds and nursery supplies—catalogue

BRIMFIELD GARDENS NURSERY, 245 Brimfield Road, Wethersfield, Conn.
Trees and shrubs for bonsai

BRISTOL NURSERIES, Bristol, Conn.
Trees and shrubs

BUCKLEY, DANIEL F., 5215 Sandburg Drive, Sacramento 19, Calif.
Japanese five needle pine for bonsai

BURGESS SEED AND PLANT CO., Galesburg, Mich.
Trees and shrubs

C

CALIFORNIA NURSERY CO., Niles, Calif.
Trees and Shrubs

CLARENDON GARDENS NURSERY, Lindin Rd., Pinehurst, N.C.
Hollies, camellias and azaleas—catalogue—25¢

CLAY ART CENTER, 40 Beech Street, Port Chester, N.Y.
Containers

COMSTOCK NURSERIES, P.O. Box 158, Grosse Ile, Mich.
Bonsai containers, nursery stock and tools—catalogue —25¢

D

EARLE DILATUSH'S HOLLY NURSERY, U.S. Highway #130, Robbinsville, N.J. 08691
Hollies, dwarf juniper

E

EASTERN SHORE NURSERIES, INC., Box 743, Easton, Md. 21601
Nursery stock

EL SEGUNDO GERANIUM GARDENS, Box 157 Vista, Calif.
Geranium cuttings

F

FANTASTIC GARDENS, 9550 S.W. 67th Avenue, Miami 56, Fla.
Tropical plants, catalogue

FIORE, CHARLES NURSERIES, INC. Praire View, Ill. 60069
Flowering trees and shrubs, evergreens, etc. catalogue

FRUITLAND NURSERIES, Box 910, Augusta, Ga.
Broad-leaved evergreens, flowering shrubs—catalogue

G

GARDEN MIRACLES, P.O. Box 57, Gladstone, Oregon
Plant propagation material and fertilizers

GIRARD NURSERIES, Geneva, Ohio
Small potted trees suitable for training as bonsai, seeds of evergreen trees, flowering trees, shrubs and older specimens available—catalogue

GREENWICH NURSERY & PLANTS, 180 Greenwich Street, N.Y.C. (near Cortland Street)
Large selection of unusual plants for bonsai
Containers, soils, gravels, accessories and unusual stones.

H

HILL, D. NURSERY, CO., Dundee, Ill.
Nursery stock for bonsai, containers and accessories

HOLLY HILL, Straight Path, RD 4, Huntington, N.Y.
Heath and heather, catalogue

HUND, DON "THE BONSAI MAN," 20611 Watson Road, Cleveland, Ohio 44137
Bonsai material

HYDROPONIC CHEMICAL CO., INC. Box 97-C Copley, Ohio 44321
Fertilizers, special growing mediums and garden supplies—catalogue

I

IBSEN SEED CO., INC. 1560 Old Shell Road, Mobile, Ala.
Dwarf citrus

J

JAPAN ART CO., 690 Madison Ave., N.Y.C.
Bonsai containers, tools and supplies—catalogue

JAPAN FOLK CRAFT, Inc., 167 West 4th Street, N.Y., N.Y.
Bonsai containers

K

KAWA BONSAI COMPANY, LTD., Box 398A Millersville, Md.
Imported bonsai containers and supplies—catalogue —25¢

KEITH VALLEY NURSERY AND BONSAI TREE FARM, McKean Road, Spring House, Penna. 19477
Collected bonsai; containers and supplies

KELSEY NURSERY SERVICE, Highland, N.J.
Trees and shrubs; catalogue—10¢ East of Rockies; 50¢ West of Rockies

KINGSVILLE NURSERIES, Kingsville, Md. 21087
Growers of rare plants and nursery stock

KRIDER NURSERIES, INC., THE, Middlebury, Ind.
Nursery stock

L

LAIRD'S NURSERIES, 8900 Broad St., Road, Richmond, Va.
Flowering and shade trees, broad-leaved evergreens and flowering shrubs—catalogue

LIGHTS LANDSCAPE NURSERY, Richland, Michigan
Nursery Stock—catalogue

LITTLE PINE BONSAI NURSERY, THE, P.O. Box 595, Matthew, North Carolina
Containers and nursery stock for bonsai

M

McLELLAN CO., 1450 El Camino Real, South San Francisco, Calif.
Bonsai containers, mixed soils—catalogue

MANHATTAN GARDEN SUPPLY, 305 No. Sepulveda Blvd., Manhattan Beach, Calif.
Dwarf geraniums—catalogue—20¢

MAUI BONSAI NURSERY, P.O. Box 430, Wailuku, Maui, Hawaii
Trained bonsai, containers and supplies—catalogue—15¢

MAYFAIR NURSERIES, R.D. 2, Nichols, New York 13812
Dwarf conifers, dwarf shrubs, heather, trees and shrubs for bonsai

MERRY GARDENS, P.O. Box 595, Camden, Maine 04843
Rare house plants, geraniums and a large selection of miniatures—catalogue—50¢

MIKADO GARDENS, R.D. #1, Cranbury, N.J.
Nursery stock for bonsai—catalogue

MINI-ORANGE OF FLORIDA, INC. Ponkan Rd., Apopka, Fla.
Dwarf citrus, price list and brochures.

MITSU, INC., 25 West 35th Street, New York, N.Y. 10001
Bonsai containers, tools and bases—catalogue

MUSSER FOREST, INC., Indiana, Penna.
Evergreens, shade trees,—catalogue

O

OAKHURST GARDENS, P.O. 444, Arcadia, Calif.
Miniature bulbs and orchids—catalogue—35¢

OLD FALLS NURSERY, P.O. Box 606, Fallsburg, N.Y. 12733
Rare species for bonsai—catalogue—10¢

P

PETER PAULS NURSERY, R.D. #4, Canadaigua, N.Y. 14424
Containers and nursery stock; books on bonsai, catalogue—15¢

PIKES PEAK NURSERIES, Rt. 422, Indiana, Penn.
Nursery stock,—catalogue

PLANTERS, THE, 385 Bleecker Street, New York, N.Y.
House and greenhouse plants, bonsai; indoor bonsai material

POLEY-EN GARDENS, 103 Mt. Lucas Rd., Princeton, N.J.
Bonsai

PRESNER, SAMUEL L., Box 10, Coral Gables, Florida
Mature bonsai stock, dwarf trees and plants, orchid plants—price list—10¢

PUTNEY NURSERY, Putney, Vt.
Wild flowers and native plants,—catalogue

R

RICH AND SONS NURSERY, Rt. 1, Box 330 Hillsboro, Oregon
All fruit, shade and flowering trees, vines, crab-apple specialists

ROBIN, CLYDE, P.O. Box 2091, Castro Valley, Calif.
Wild tree seeds—catalogue—20¢

ROEHRS, JULIUS COMPANY, Rutherford, N.J. 07070
House and greenhouse plants—catalogue—20¢

ROSE, FRANK H., 1020 Poplar Street, Missoula, Mont.
Alpines, rare plants, collector of native plants of the northwest

ROSEDALE NURSERIES, Saw Mill River Parkway, Hawthorne, N.Y. (Rt. 44, Millbrook, N.Y.)
A complete selection of evergreens, flowering trees and shrubs, bonsai containers—catalogue

S

SHERWOOD NURSERY CO. Corbett, Oregon
Trees, shrubs for bonsai

SLEEPY HOLLOW FARM NURSERY, Rt. 1, Baden, Penna.
Container grown stock for bonsai

SPRING HILL NURSERIES, Tipp City, Ohio
Nursery material for bonsai, trees and shrubs

STANLEY'S NURSERY, 3863 Gibsonia Rd., Gibsonia, Penna. 15044
Nursery stock for bonsai

STARK BROS., Louisiana, Mo.
Trees and shrubs—catalogue

STARKER, CARL, GARDENS, Jennings Lodge, Oregon
Alpines, trees and shrubs, bonsai containers

STILLWATER GARDENS, Salisbury, Conn.
Herbs—catalogue

SUSU-EN BONSAI CO. 326 West 31st Street, P.O. Box 3015, Erie, Pa. 16505
Bonsai containers and tools, imported and domestic

T

TAKASHIMAYA, INC. 562 Fifth Avenue, New York, N.Y. 10036
(The Japanese Store on Fifth Avenue)
Containers, bases and tools for bonsai

THURMAN'S GARDENS, Route 2, Box 259, Spokane, Wash. 99207
Alpines—catalogue—20¢

TOOL SHED HERB NURSERY, THE—Turkey Hill Road, Salem Center, N.Y.
Herbs

W

WAKE ROBIN FARM, Route 1, Box 33, Home, Penna.
Woodland plants

WAYSIDE GARDENS, Mentor Ohio
Shade and flowering trees and shrubs—Catalogue—$1.00

WHISCONIER GARDENS, Brookfield Center, Conn.
Grown stock for bonsai, containers & supplies

WHITE FLOWER FARM, Litchfield, Conn.
Miniature evergreens for bonsai—catalogue—$1.00

Y

YOSHIMURA BONSAI COMPANY, 200 Benedict Avenue, Tarrytown, N.Y.
Imported bonsai, tools, containers and supplies.

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Born and raised in the Midwest, JERALD P. STOWELL first became interested in bonsai at the age of 15, when he saw an illustrated magazine article on the subject. This interest was excited many years later by a visit to the [illegible] Botanical Garden in New York. [illegible] 1957, he began to [illegible] classes with Mr. Yuji Yoshimura and now has over one hundred trees, many of which are in training, collected from wild rather than nursery stock.

Mr. Stowell helped organize, and is past president of the Bonsai Society of Greater New York. His articles have appeared in the society's *Bonsai Bulletin*, of which he is now editor, as well as *The Garden Journal* of the New York Botanical Garden. Mr. Stowell wrote the bonsai chapter in *Reader's Digest Complete Library of the Garden.*

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